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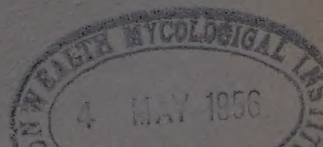
THE VETERINARY BULLETIN

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THE
VETERINARY BULLETIN

Vol. 26]

May, 1956

[No. 5

DISEASES CAUSED BY BACTERIA AND FUNGI

FRAPPIER, A. & SONEA, S. (1954). L'infection staphylococcique de l'embryon de poulet inoculé par voie sous-cutanée. [*Staphylococcus* infection of chick embryo inoculated subcutaneously.] — *Un. méd. Can.* **83**, 382-391. [English summary modified.] 1482

A new method for studying the pathogenicity of staphylococcus, using chick embryo, is described. Very small inocula of staphylococci administered s/c to 18 or 19-day-old chick embryos caused death in 3 or 4 days. With some human strains, the LD₅₀ was reached with 10 organisms and even less. Tests with washed staphylococci gave similar results. So no toxin seems necessary for the inoculum to produce a lethal infection. Killed staphylococci caused no pathogenic effects, even when inoculated in large numbers. The results of repeated experiments were consistent. Mortality was correlated with the the number of staphylococci inoculated.

VIGUE, R. F. (1955). Intramammary use of hydrocortisone in mastitis: a preliminary report.—*Vet. Med.* **50**, 679-682 & 721. 1483

A mixture of hydrocortisone and antibiotics was injected into 188 quarters in the treatment of acute mastitis; it was considered that cures were increased by about 20%.

—T.E.G.R.

HOWELL, D. G., SMITH, I. M., HOLMAN, H. H. & PATTISON, I. H. (1956). Experimental streptococcal mastitis. XI. Immunological studies in the cow.—*J. comp. Path.* **66**, 49-61. [Authors' conclusions modified.] 1484

Forty-four cows were divided into 2 equal and comparable groups according to their serum titres of detectable inhibitors to staphylococcal hyaluronidase. The animals in one group were given 6 s/c vaccinations with 10-ml. amounts of formolized 18-hour broth cultures of *Str. agalactiae* Strain A 100.

Control animals were given similar doses of formolized broth. Animals in both groups were exposed to a single intramammary test dose of living *Str. agalactiae* Strain A 100 injected into one quarter. The doses used were:— five pairs of cows 10⁵ organisms, 12 pairs 10⁷ organisms, five pairs 10⁸ organisms. Vaccinated animals became free from infection more frequently and had lower neutrophile counts in the milk than controls. An analysis of covariance showed no significant difference in milk yield from the infected quarters between the groups, but when the yields of the second week were compared with the first week the vaccinated cows tended to show an increase in yield and the controls a further drop in yield. The Whiteside test and the index for the macroscopic appearance of the milk showed little difference between the groups. The group that received 10⁵ living organisms was not homogeneous with the 10⁷ and 10⁸ groups. In the 10⁵ group *Str. agalactiae* was not recovered on any occasion from 4 of the 5 vaccinated cows. After exposure to a second dose in their next lactation (16 months later), these 4 still had a high level of resistance.

SCHALM, O. W., GRAY, D. M. & NOORLANDER, D. (1955). Procedures for the use of the Whiteside test on milk in the laboratory or barn.—*N. Amer. Vet.* **36**, 1011-1016. 1485

In addition to the modified Whiteside test described by Murphy & Hanson [*V.B.* **11**, p. 739] for laboratory use in rapidly detecting milk containing products of inflammation (fibrin and more than 200,000 polymorphonuclear leucocytes per ml.), a further modification of the test for field use is described. Two ml. of 4% sodium hydroxide is placed with a drop of bromcresol into 4 test tubes and about 10 ml. of the foremilk from each quarter drawn into them. The tubes are then rapidly

inverted several times and the glass above the milk inspected for the occurrence of particulate material.—A. ACKROYD.

ALFORD, J. A., GUNTER, J. J. & EDWARDS, C. D. (1955). **Reproductive tract infection in a dairy herd caused by group A streptococci.**—*Cornell Vet.* **45**, 357-360. [Authors' summary modified.] **1486**

β -Haemolytic streptococci belonging to Lancefield Group A were isolated from the genital tract of 12 dairy cows in a herd of 110. The streptococci were isolated several times from each of 6 cows that were classed as difficult breeders; these cows failed to conceive until after the organism had disappeared from the genital tract.

BOOR, A. K. (1955). **An antigen prepared in vitro effective for immunization against anthrax. I. Preparation and evaluation of the crude protective antigen.**—*J. infect. Dis.* **97**, 194-202. **1487**

BOOR, A. K. & TRESSELT, H. B. (1955). **An antigen prepared in vitro effective for immunization against anthrax. II. Concentration of the protective antigen by chemical fractionation.**—*Ibid.* 203-206. **1488**

TRESSELT, H. B. & BOOR, A. K. (1955). **An antigen prepared in vitro effective for immunization against anthrax. III. Immunization of monkeys against anthrax.**—*Ibid.* 207-210. [Abst. from authors' summaries.] **1489**

I. A culture medium was developed for the production, *in vitro*, of a cell-free antigen against anthrax. Preliminary immunity tests on lab. animals gave satisfactory results.

II. The antigen was concentrated by precipitation with ethanol at a low temp.; by salting out with ammonium- or sodium-sulphate; and by a combination of the two methods. It was then dialyzed and freeze-dried; it exhibited α -globulin characteristics in its precipitation limits and electrophoretic mobility.

III. The cell-free antigen protected monkeys against 10,000 m.l.d. of virulent anthrax spores.

KOLESOV, S. G. & GUTTMAN, A. A. (1955). **[Complications resulting from the use of "STI" anthrax vaccine.]**—*Trud. nauchno-kontrol. Inst. vet. Preparatov.* **5**, 22-29. [In Russian.] **1490**

The authors investigated reactions, often fatal, in cattle, sheep and goats following the inoculation of "STI" anthrax vaccine (a non-capsulated variant of *B. anthracis*). In

many cases a large abscess developed at the site of inoculation and the animals died from sepsis. Inoculation of lab. animals with material from the local lesions proved that the vaccine had not increased in virulence. It was concluded that the underlying cause was undernourishment, vaccination during adverse climatic conditions, or subclinical infection of the animal with another disease.

—F. A. ABBEY.

KOLESOV, S. G. & GRACHEV, V. N. (1955). **[Obtaining precipitating anti-anthrax serum by hyperimmunizing horses with living cultures of anthrax bacilli.]**—*Trud. nauchno-kontrol. Inst. vet. Preparatov.* **5**, 30-39. [In Russian.] **1491**

An account of a modification of the conventional method of obtaining hyperimmune serum for use in the precipitin test for anthrax. Living, weakly virulent, but immunogenic anthrax bacilli produced a more specific hyperimmune serum, when injected i/v into horses, than did formalized cultures, and the process took 2-2½ months compared with 3-6 months by the conventional procedure.

—F. A. ABBEY.

SPEARS, H. N. (1955). **The potency of anti-anthrax serum.**—*Brit. vet. J.* **111**, 535-537 [Author's summary slightly modified.] **1492**

The results of 101 potency tests carried out in rabbits on batches of anti-anthrax serum derived from hyperimmunized horses and cattle are summarized. Equine antiserum was about twice as effective as bovine antiserum in protecting these animals passively, although, from field experience, it would appear that the homologous type gives better therapeutic results when treating infected cattle in natural outbreaks of the disease. It is suggested that this form of potency test in small laboratory animals is unsatisfactory for anti-anthrax sera intended for use in other species.

MORRIS, E. J. (1955). **A selective medium for *Bacillus anthracis*.**—*J. gen. Microbiol.* **13**, 456-460. [Author's summary modified.] **1493**

A medium containing propamidine is described which has high selective activity for *B. anthracis*. Sporulating organisms are essential as inoculum for the medium.

STAMATIN, N. & CERNI, I. (1955). **Tipurile de *Mycobacterium tuberculosis* izolate de la porci in R.P.R.** [Strains of *Mycobact. tuberculosis* isolated from pigs in Roumania.]—

Ann. Inst. Pat. Igien. anim., București, **5**, 43-49. [In Roumanian. French and Russian summaries.] **1494**

TB. was present in 33 out of 1,138 slaughtered pigs. Eighteen strains of tubercle bacilli were isolated from lesions: 11 were of bovine type, 5 human and 2 avian.—R.M.

PALLASKE, G. (1955). Zur Frage der aerogenen tuberkulösen Infektion des Schweines. [**Aerogenous infection in TB. in pigs.**]—*Mh. VetMed.* **10**, 495-503. **1495**

P. examined more than 1,000 slaughtered pigs with TB. Lesions were found in the lungs or regional lymph nodes of the lungs in 97 pigs, but in only 8 of them was there evidence of aerogenous infection, namely the absence of lesions in other parts of the body. There are 10 photomicrographs of lung lesions.—R.M.

ELEK, P., KERTAY (KERBLER), N. & SZABÓ SZÜCS, J. (1954). Gestaltung der Antikörperproduktion bei tuberkulösen Rindern im Laufe der Tuberkulinreaktion. [**Antibody production in tuberculous cattle during the tuberculin reaction.**]—*Acta vet., hung.* **4**, 349-363. [In German. Russian summary.] **1496**

Injection of tuberculin in the subcutaneous, Stormont, and ocular tuberculin tests was followed by the production of serum antibodies demonstrable by the haemagglutination test of Dubos & Middlebrook. During the actual reaction in cattle, no antibody response was observed, but the level began to rise 3 days after injection, reached a max. between 7 and 14 days, and returned to its original level after about 21 days. Antibody production occurred both in the absence of a clinical tuberculin reaction, and when no demonstrable antibodies were present before injection. The amount of antibodies produced appeared to depend upon the dose of tuberculin and the character of the tuberculous process.

—A. B. PATERSON.

SCHIFF, W. (1955). Zur Differenzierung der hautwirksamen und hämosensibilisierenden Eigenschaften von gereinigtem Tuberkulin. [**Differentiation of the skin-activating and haemosensitizing properties of P.P.D. tuberculin.**]—*Z. Hyg. InfektKr.* **142**, 90-108. **1497**

P.P.D. tuberculin of the type "GT (Hoechst)" when treated with papain, trypsin or pepsin, no longer caused skin reactions when injected i/d into tuberculous g. pigs, but retained its ability to bind TB. antibodies and to sensitize normal erythrocytes. S. concluded

that these properties depended on two separate substances, one a skin-activating serologically inactive protein, and the other a serologically active haemosensitizing polysaccharide which had no action on the skin. Accordingly, the number of tuberculin units in a tuberculin bore no relation to its serological activity.—R.M.

PLACIDI, L., SANTUCCI, J. & HAAG, J. (1955). La réaction hémorragique dans l'épreuve de la tuberculation chez le boeuf. [**Haemorrhagic reaction to the injection of tuberculin in cattle.**]—*Rec. Méd. vét.* **131**, 663-664. **1498**

A second i/d injection of Old Tuberculin evoked a haemorrhagic response in cattle, but that of a synthetic tuberculin did not. The response was very marked when a mixture of synthetic tuberculin and broth was used for the second injection, but broth alone produced no response.—G. FULTON ROBERTS.

METAXAS, M. N. & METAXAS-BUEHLER, M. (1955). Studies on the cellular transfer of tuberculin sensitivity in the guinea pig.—*J. Immunol.* **75**, 333-347. **1499**

The tuberculin reaction is believed to take place by combination of specific antigen and antibody, but so far passive transfer of tuberculin sensitivity has only proved possible using leucocytes from a sensitized animal. Good evidence is presented that in the passively sensitized g. pig the response to tuberculin is produced by direct interaction of tuberculin with the transferred leucocytes, that no latent period occurs, and that no indirect mechanism is involved.—A. B. PATERSON.

BAUMGARTNER, H. (1955). Die Zuverlässigkeit der mikroskopischen Milchsediment-Untersuchung für den Nachweis der Eutertuberkulose. [**Reliability of microscopic examination of milk-sediment in demonstrating TB. of the udder.**]—*Schweiz. Arch. Tierheilk.* **97**, 492-503. [English, French and Italian summaries.] **1500**

An analysis is presented of 1,801 samples of milk suspected of containing tubercle bacilli, and examined microscopically after Ziehl-Neelsen staining. Of these 1,234 were further tested by g. pig inoculation and the whey of 1,156 by the haemolysis test, as described by Schmid [*V.B.* **25**, 3512]. The results of microscopic examination were confirmed in 99 positive and 1,702 negative samples, and B.

concluded that this is a reliable method for demonstrating tubercle bacilli in milk.

—W. R. BETT.

REUSS, U. & BRATKE, E. (1955). Die Leistungsfähigkeit des fluoreszenzmikroskopischen Verfahrens bei der bakteriologischen Tuberkulosedagnostik. [The fluorescence microscope in the bacteriological diagnosis of TB.]—*Rindertuberkulose*, 4, 222-229. 1501

Accuracy tests were carried out on 4 methods of demonstrating tubercle bacilli. Of 165 infected samples of human and bovine origin, the fluorescence microscope (FM) revealed bacilli in 18.2%, Ziehl-Neelsen staining (ZNS) in 9.1%, culture in 52.1% and g. pig inoculation in 95.8%. Furthermore, the FM and ZNS methods revealed acid-fast organisms indistinguishable from tubercle bacilli in 32 and 7, respectively, out of 551 samples free from tubercle bacilli. It was concluded that, although superior to the ZNS method, the FM is not to be recommended for the diagnosis of TB.—M.G.G.

COLE, L. R., MATLOFF, J. J. & FARRELL, V. R. (1955). A method for coupling protein antigens to erythrocytes. II. Use of the method in the diagnosis of tuberculosis.—*J. exp. Med.* 102, 647-653. [Authors' summary modified.] 1502

A serological technique, using formolized r.b.c. coupled to tuberculin P.P.D. as antigen, was tested in 124 tuberculous and 139 non-tuberculous patients. The stability of the antigen preparation, and the omission of an adsorption procedure for the removal of isoagglutinins simplified the test. The results indicate that the technique warrants further trial as a diagnostic criterion of TB.

RITTS, R. E., JR. & FAVOUR, C. B. (1955). *In vivo* uptake of isotope-tagged tuberculin by leucocytes.—*J. Immunol.* 75, 209-213. 1503

Purified protein derivative (P.P.D.) was labelled with ¹³¹I without altering its biological potency. After i/v injection into normal rabbits, it was absorbed within 4 hours by the leucocytes, which then disappeared from the bloodstream. The plasma continued to contain appreciable amounts of tagged P.P.D.

—W. R. BETT.

I. STOENESCU, V., SÂNDULESCU, S. & DRĂGHICI, D. (1955). Tuberculinarea intradermică repetată în diagnosticul alergic al tuberculozei aviare. [Repeated intradermal injections of tuberculin for the diagnosis of

avian TB.]—*Anu. Inst. Pat. Igien. anim., București*, 5, 28-34. [In Roumanian. French and Russian summaries.] 1504

II. STOENESCU, V. & SÂNDULESCU, S. (1955). Intravascularreactia la tuberculină în tuberculoza aviară. [Reaction to the intravenous injection of tuberculin in avian TB.]—*Ibid.* 35-42. [In Roumanian. French and Russian summaries.] 1505

I. A treble intradermal tuberculin test, in which the 2nd and 3rd injections were given at 48 and 72 hours after the first, detected 2-4 times as many infected fowls as did a single test. Over 8,000 fowls were tested and the results were confirmed by P.M. examination. Infected pullets aged 6-8 months failed to react to the single or the treble test.

II. The i/v injection of 1 ml. of avian tuberculin diluted 1:20 provoked, in fowls with TB., an increase of 3-6 times in the number of large mononuclear cells in the blood, 48-72 hours after injection. This reaction was not observed in fowls free from TB.; it did occur in fowls previously inoculated with attenuated tubercle bacilli.—R.M.

BOYDEN, S. V. & ANDERSEN, M. E. (1955). Diet in experimental tuberculosis in the guinea-pig. — *Acta path. microbiol. scand.* 37, 201-204. [In English.] 1506

The survival time of g. pigs injected intravenously with a large dose of tubercle bacilli is considerably shortened if the animals are kept on the winter diet of the State Serum Institute, Copenhagen. Both summer and winter diets contain hay and a mixture of oats, bran and fish, meat and bone meal. In summer fresh grass and lucerne are provided, and in winter sugar beet.—W. R. BETT.

HEDGECOCK, L. W. (1955). Effect of dietary fatty acids and protein intake on experimental tuberculosis.—*J. Bact.* 70, 415-419. 1507

Dietary administration of fatty acid esters produced a sharp fall in the death rate of mice inoculated with tubercle bacilli. Resistance was greatest in mice fed rations containing 20% protein. Protein alone did not increase resistance.—M.G.G.

TARSHIS, M. S., WEED, W. A., KINSELLA, P. C., PARKER, M. V. & DUNHAM, W. B. (1955). Further experience with a new blood medium for the cultivation of *Mycobacterium tuberculosis*.—*Amer. J. publ. Hlth.* 45, 1157-1161. 1508

A medium was described for the cultiva-

tion of tubercle bacilli in routine diagnosis of TB., consisting of 1.5 g. agar, 1 ml. glycerol, 30 ml. of old human blood from blood banks, 69.0 ml. of distilled water and crystalline potassium penicillin G.—E.G.

FÖLDES, J. (1955). The nature of specific polysaccharides of tubercle bacilli.—*Acta microbiol. hung.* 2, 297-313. [In English. Russian summary.] 1509

Two polysaccharides, P₁ and P₂, extracted by mild and drastic methods respectively from heat-killed tubercle bacilli, were found to have different chemical compositions and to behave differently in the Dubos-Middlebrook haemagglutination test. P₁, which contained nucleic acid (DNA) was capable of sensitizing erythrocytes while P₂, from which nucleic acid was absent, was capable only of inhibiting the activity of an antiserum. DNA was almost wholly responsible for the capacity of P₁ to adhere to erythrocytes. Serologically, P₁ was not homogeneous, but contained both sensitizing and inhibiting substances. Chemically, it contained galactose, arabinose, and D-ribose, and showed two electrophoretic components, while P₂ consisted only of galactose and arabinose.—A. B. PATERSON.

SEIBERT, F. B., FIGUEROA, E. S. & DUFOUR, E. H. (1955). Isolation, identification, and classification of proteins of tuberculin and the tubercle bacillus.—*Amer. Rev. Tuberc.* 71, 704-721. [French and Spanish summaries.] 1510

The A, B and C proteins originally isolated from unheated culture filtrates of human type tubercle bacilli were shown to be produced in variable relative amounts regardless of strain, time of growth, the medium used, or method of isolation. The fractions could, however, be regularly isolated and identified by their chemical and electrophoretic properties. Skin potency tests in the human subject confirmed that C protein was considerably less potent than standard P.P.D.-S. The A and B proteins differed less from P.P.D.-S. but the extent of difference varied in patients with different degrees of hypersensitivity. The results indicated that production of a potent tuberculin should be preceded by removal of the less potent C protein.—A. B. PATERSON.

HELLMANN, E. (1955). Wachstumsformen von Mykobakterien auf der Mikrokultur. [Growth forms of mycobacteria in micro-culture.]—*Zbl. VetMed.* 2, 629-640. [English, French and Spanish summaries.] 1511

All species of mycobacteria are shown to have the capacity to form cords in culture. Mammalian tubercle bacilli produced cords regularly, while other species did so only under conditions of high humidity. The capacity of different species to form cords appears to depend on the adhesiveness of the bacillary surface.—A. B. PATERSON.

WILSON, M. M. (1955). A study of *Corynebacterium equi* infection in a stud of thoroughbred horses in Victoria.—*Aust. vet. J.* 31, 175-181. 1512

An investigation was carried out in a Thoroughbred stud where heavy losses, apparently due to *C. equi* infection were occurring in young foals. A filtrate of a killed culture of the organism, isolated from a natural case, was used to conduct an intradermal sensitivity test in the mares. Read at 18 to 24 hours a positive reaction, comprising an oedematous plaque at the site of injection, seemed to be related to the incidence of the disease in foals from particular mares. A tendency to a relation between a positive test and barrenness in the mares was also observed.

—D. C. BLOOD.

HAUPTMAN, B. (1955). Gruźlica rzekoma owiec (Pseudotuberculosis ovis). [*Corynebacterium ovis* infection in sheep.]—*Méd. vét., Varsovie.* 11, 718-721. [In Polish.] 1513

The onset of the disease is slow and the course prolonged, with very few clinical symptoms. Although mainly adults are affected it also occurs in lambs. Enlargement of superficial lymph nodes is often the only symptom noted, but when the internal organs are affected there is cachexia. Deaths occur sporadically. The condition was reproduced in a g. pig by s/c inoculation of 0.3 ml. of broth culture of *C. ovis*. Of 22 flocks numbering 10,000 sheep investigated only 4 flocks were free from the disease; in the others the percentage of affected animals varied from 0.5 to 25%. Control is based on the slaughter of infected animals and sound management and feeding. No treatment of any value is known.

—M. GITTER.

BAHR, L. (1955). Fortsatte undersøgelser vedrørende "sommermastitis" (S.M.) hos goldkvaeg. [Summer mastitis.]—*Dansk Maanedsskr. Dyrlaeg.* 63, 365-388. [Abst. from English summary.] 1514

Of 22 samples of flies from 22 herds of cattle affected with summer mastitis (S.M.) in Sweden and Jutland all samples contained

the fly, *Hydrotaea irritans*, 18 this fly alone. B. prepared a fly-killing ointment, to be smeared on the teats of dry animals 3 or 4 times during the "fly-season" (June 15th-August 24th). He described 3 trials with this ointment. In one trial, of 48 treated animals, 2 developed S.M., where as of 24 untreated controls, 8 developed S.M. In Halland (Sweden), in 1954, up to July about 20 dry animals in 14 herds were affected by S.M. After treatment, only one became affected. In South Jutland, 15% annually of all cattle in 22 herds developed S.M. from 1951-53. During 1954, when they were treated, only about 2.75% developed S.M.—M.G.G.

AEHNELT, E. (1955). Zur Vorbeuge der Pyogenes-Mastitis bei Weiderindern mit Kontaktinsektiziden. [Control of *Corynebact. pyogenes* mastitis in grazing cattle with contact insecticides.]—*Dtsch. tierärztl. Wschr.* 62, 493-498. 1515

Proprietary insecticides containing either benzene hexachloride, D.D.T. or a toxaphene-lindane mixture were used for the spraying of udder and coat in 570 non-lactating cattle in North German districts, where the incidence of summer mastitis in the preceding 2 years had averaged about 8%. At the end of the grazing season only 4 developed the disease as compared with 41 among 438 untreated controls.

—E.G.

WYNOHRADNYK, V., PAPADOPOUL, M. & CARJEVSKI, I. (1955). Studiul imunobiologic al tulpinilor de B. rujetului izolate recent in R.P.R. [Immunobiological study of strains of *E. rhusiopathiae* recently isolated in Roumania.]—*Anu. Inst. Pat. Igien. anim., Bucuresti.* 5, 50-65. [In Roumanian. French and Russian summaries.] 1516

During 1953-54 362 strains of *E. rhusiopathiae* were isolated from fatal cases of swine erysipelas. The majority of them belonged to type A described by Dedié. Strains isolated from outbreaks where swine erysipelas vaccine or antiserum had been employed were on the whole more virulent for mice than strains from unvaccinated, untreated pigs. High immunizing power was associated with an ability of the strain to reduce methylene blue at a conc. of 1:10,000 within 3 hours.—R.M.

MÜLLER, L. F. (1955). Vergleichende Praxisuntersuchungen zur Behandlung des Rotlaufes. [Comparative study of the treatment

of swine erysipelas.]—*Mh. VetMed.* 10, 489-495. 1517

Swine erysipelas antiserum obtained from pigs was more effective therapeutically than serum obtained from horses, but even so, only 40% of treated pigs recovered. Intravenous administration gave no better results than subcutaneous. Combined serum and penicillin therapy cured 90% of cases. Procaine penicillin (3,000 i.u. per kg. body wt.) with aluminium monostearate gave the best results.—R.M.

BAIN, R. V. S. (1955). Studies on haemorrhagic septicaemia of cattle. V. Tests for immunity in vaccinated cattle.—*Brit. vet. J.* 111, 511-518. [Author's summary slightly modified.] 1518

The mouse protection test is the best indication of immunity in vaccinated cattle. An agar agglutination test, which is simple, gives fairly good results. The agglutination and complement-fixation tests in their present forms are less satisfactory.

PRISEKLOVA, D. O. & ZORINA, N. R. (1953). [Shedding of the fleece in Soviet Merino sheep with infectious mastitis.]—*Trud. Inst. vet. Derm.* 2, 72-83. [In Russian.] 1519

The authors studied 188 cases of shedding of the fleece during the course of infectious mastitis in ewes, caused by *Bact. mastitidis ovis* (*Pasteurella mastitidis*). Biopsy samples of skin for histological examination were taken from 10 ewes at intervals of 5 days. The cause of the shedding was temporary degeneration of the roots of the wool fibres, resulting from toxæmia. Normal growth of wool was suspended for at least a month. There are 8 illustrations.—F. A. ABBEY.

CRÎSTET, I. (1955). Cercetări asupra florei microbiene în pneumonia enzootică a viteilor din R.P.R. Studiul cocobacilului Gram negativ izolat din focar. [Bacterial flora in endemic pneumonia of calves in Roumania. Study of a Gram-negative coccobacillus isolated from outbreaks.]—*Anu. Inst. Pat. Igien. anim., Bucuresti.* 5, 75-81. [In Roumanian. French and Russian summaries.] 1520

A Gram-negative coccobacillus was consistently isolated from endemic bronchopneumonia in calves, often in pure culture. Its morphological, cultural and biochemical properties and its sensitivity to antibiotics were similar to those of *Pasteurella*, but it differed from the 4 known species in its immunological

characters, its pathogenicity for lab. animals, sheep and cattle, and its failure to produce indole. C. proposed that the organism be named *Past. romanica*.—R.M.

WOOD, P. C. (1955). **The epidemiology of white scours among calves kept under experimental conditions.**—*J. Path. Bact.* **70**, 179-193. **1521**

When a large number of new-born calves were introduced into a single closed community, spontaneous white scour infections appeared. Of 153 deaths 134 were caused by *Bact. coli* faecal type I. The most common finding was a septicaemia, particularly in calves deprived of colostrum. In those given colostrum the intestinal tract and the regional lymph nodes only were affected. The coliform flora of the calf-pens was dynamic, a heterogeneous group of organisms being present in the beginning of a season, and particular serological types being established later. The observed 'build-up of infection' within the calf-pens is connected with the presence of special serological types of *Bact. coli* introduced from widespread farms, the more virulent types becoming predominant by a process of natural selection.—W. R. BETT.

SALADINO, E. & MATRACIA, S. (1955). Sul potere battericida degli organi di animali normali e vaccinati con *E. coli*. [**Bactericidal properties against *Bact. coli* of tissues from vaccinated and unvaccinated animals.**]—*G. Batt. Immun.* **47**, 280-288. [English, French and German summaries.] **1522**

In immunized animals there was a decrease in the bactericidal properties of the blood—Lusena's paradox phenomenon; a corresponding decrease did not always occur in the case of the organs, in some of which there was even an increase in the bactericidal and inhibitory properties which varied in the different species under test, viz., g. pigs, rats and rabbits.—T.E.G.R.

MORRISON, G. A., GRIFFITHS, D. E. & HARRIS, M. (1955). **Aeration of coliform cultures.**—*Nature, Lond.* **176**, 1178. **1523**

Cultures of coliform organisms having failed to grow when aerated, owing to carbon dioxide deficiency, the trouble was eliminated by placing the air intake below a gas-operated incubator, and by spraying, filtering and washing the air drawn in.—M.G.G.

FLANNERY, D. (1955). ***Salmonella cholerae-suis* from cattle in New Zealand.**—*N.Z. vet. J.* **3**, 115. **1524**

An account of the first recorded isolation of *S. cholerae-suis* from cattle in New Zealand.—M.G.G.

WALZBERG, U. (1955). Zur Verbreitung der Salmonellose des Rindes im nordwestdeutschen Küstengebiet unter besonderer Berücksichtigung des Raumes Weser-Ems. [***Salmonella* infection in cattle in North West Germany.**]—*Arch. Lebensmittelhyg.* **6**, 223-226. **1525**

W. discussed reasons for the relatively high incidence of bovine salmonellosis in the low-lying country bordering the coast and rivers of north-western Germany. *Salmonella* were isolated from 4% of meat samples examined bacteriologically at Oldenburg during a year; 90% were *S. dublin*.—R.M.

COTTEW, G. S. (1955). **Salmonellosis of live-stock in Queensland.**—*Qd agric. J.* **81**, 103-106. **1526**

A résumé of symptoms and lesions occurring in 360 outbreaks in animals and birds.—R. BARRY.

SCHILDMEYER. (1955). Anwendung und Wirkung von Terramycin in der Behandlung der weissen Kückenruhr. [**Treatment of *S. pullorum* infection with terramycin.**]—*Tierärztl. Umsch.* **10**, 405-406. **1527**

Terramycin powder, 10 g. in 5 l. of drinking water, used for 3 days, produced marked improvement after 24 hours in *S. pullorum* infection. No losses occurred. The chicks were completely normal on the third day. Particularly striking was the rapid growth and vitality of the treated chicks compared with the untreated ones.—W. R. BETT.

GLANTZ, P. J. & GORDEUK, S., JR. (1955). **In vitro and in vivo sensitivity of the fowl typhoid organism, *S. gallinarum*, to antibiotics.**—*Poult. Sci.* **34**, 880-890. **1528**

Aureomycin, bacitracin, chloramphenicol, dihydrostreptomycin, penicillin, terramycin and polymyxin B were used singly and in various combinations. *In vitro* and *in vivo* tests agreed fairly closely. Chloramphenicol was the most effective drug, in doses of 200 mg. or 1-2 g. per lb. of feed. The antibiotics used had only a bacteriostatic effect on *S. gallinarum*.—D. LUKE.

THAL, E. & KALLINGS, L. O. (1955). Zur Bestimmung des Genus *Salmonella* mit Hilfe eines Bakteriophagen. [Identification of the genus *Salmonella* with the aid of a bacteriophage.]—*Nord. Vet.Med.* 7, 1063-1071. [In German. English and Swedish summaries.] 1529

A method described by Cherry *et al.* [*V.B.* 25, 912] was employed in the identification of salmonella. It is based on the specific lysis by the bacteriophage "0-1". The authors examined 2,134 strains of Gram-negative organisms, including 1,811 strains of *Salmonella* representing 169 different types: 1,802 of the strains of *Salmonella* were lysed by the phage. They concluded that the method was sufficiently reliable to be used, in combination with biochemical tests, for routine diagnostic work instead of polyvalent sera.

—R.M.

DIERNHOFER, K. (1955). Zur Diagnose der Rinderbrucellose mit der Intrakutanprobe. [Diagnosis of bovine brucellosis with the intradermal test.]—*Dtsch. tierärztl. Wschr.* 62, 401-403. 1530

A non-agglutininogenic, specific fraction of the *Br. abortus* endo-antigen was used for the i/d test in cattle. The allergic reactions obtained were shown to be group-specific for *Br. abortus*, *Br. suis* and *Br. melitensis*. The antigen can be extracted from a bacterial suspension, which can then still be used for agglutination tests. The results were considered promising, but further work is required to perfect the method, before a final assessment can be made of its advantages.

—F. K. LEEB.

BUZNA, D. (1955). Az intradermális brucellin-próba és a szerodiagnosztikai próbák összehasonlító vizsgálatáról. [Comparison of the intradermal brucellin test and serological tests.]—*Mag. állator. Lapja.* 10, 361-364. [In Hungarian. English and Russian summaries. Abst. from English summary.] 1531

The brucellin prepared by the author has no antibody-producing effect and therefore does not influence the result of serological tests. In symptomless herds which were serologically negative, 8.5% of the cattle reacted to the i/d test. In infected herds, i/d tests gave 1.6-18.5% more positive reactions than serological tests. Animals vaccinated with Strain 19 all reacted to the i/d test 6 months later, but only 64.7% reacted to serological tests.

—M.G.G.

FOMICHEVA, A. S., AKULOVA, M. F., APOLLOSOV, K. A., KUSHINA, L. K. & KOSTYAEVA, A. A. (1955). [Role of antibacteriophage serum in the diagnosis of brucellosis.]—*Veterinariya, Moscow.* 32, No. 12, pp. 67-68. [In Russian.] 1532

The authors prepared a specific antiserum against a bacteriophage of brucella and added it to culture media used for the diagnostic isolation of brucella from aborted foetuses, by the method first described by Drozhevkin & Kiritsev (1955). On the surface of solid agar slopes (Marten's agar pH 6.9) 0.1 ml. antibacteriophage serum was deposited 20 min. after the inoculation of foetal material. The tubes were held horizontally for a further 20 min. to ensure even distribution of the serum. By this method cultures of *Br. melitensis* or *Br. abortus* were obtained from 39 bovine and 36 ovine foetuses, compared with 16 and 17 isolations, respectively, from media without the serum.—R.M.

KÄSTLI, P. (1955). Die Bedeutung der Testkultur für den Ausfall der Abortus Bang-Milchagglutination. [Need for standardization of test cultures for use in the *Brucella abortus* ring test.]—*Milchwissenschaft.* 10, 3-7; 48-56. [English, French and Spanish summaries.] 1533

Wide variations are reported in the sensitivity of *Br. abortus* to the ring test when grown on 14 different media. A standardization of media is called for.—M.G.G.

OGONOWSKI, K. (1955). Brucellosis: a note on the relationship between the milk ring test results and the size and disparity in size of the fat globules.—*Vet. Rec.* 67, 1127-1128. [Author's summary modified.] 1534

Milk samples from infected cows were constantly negative to the ring test when the fat globules were of uniform and predominantly small size, and invariably positive when the fat globules showed a marked difference in size. These findings, based on the theory of cream formation, may partly explain the occurrence of negative ring test reactions in infected milk.

SHALASH, M. R. (1955). Preliminary note on the agglutination reaction of buffalo's milk with ABR test stained antigens.—*FAO/WHO Expert Advisory Panel on Brucellosis.* (WHO/Bruc/113.) [Author's summary modified.] 1535

The milk ring test appears to be suitable for detecting brucella in buffalo's milk. Future

work on milk from naturally infected buffaloes is planned. Tetrazolium stained antigen is more sensitive than haematoxylin stained antigen when agglutinins are added artificially to buffalo's milk.

NØRRUNG, V. (1955). En modificeret objektglasagglutinationsmetode med indtørret vitalfarvet brucellaantigen. [A modified slide agglutination method using dried brucella antigen stained *intra vitam*].—*Nord. VetMed.* 7, 767-772. [In Danish. English and German summaries.] 1536

0.02-ml. droplets of 4% tetrazolium-stained brucella antigen are incubated to dryness on cellophane. For use, a droplet, with 0.05 ml. saline and 0.01 ml. serum, is stirred on the card-mounted cellophane, warmed if necessary, and examined for agglutination. In a comparison with the usual test-tube method, of 365 sera, 159 were negative in both tests, 206 positive in both. The card method showed no relation between agglutination time and serum titre.—F. R. PAULSEN.

BAUMGARTNER, H. (1955). Erfahrungen mit der Brucellenzüchtung auf dem "Milieu W". [Cultivation of brucella on "W" medium].—*Schweiz. Arch. Tierheilk.* 97, 357-365. [English, French and Italian summaries.] 1537

For the demonstration of brucella in milk, "W" medium [see *V.B.* 25, 2306] proved to be superior to the crystal violet agar plate, because it inhibited the growth of extraneous organisms, and gave better growth of brucella. Tests of the milk from 31 herds showed that, although "W" medium may not reveal very low concentrations of brucella in mixed milk, it is a reliable method of testing milk for public consumption.—M.G.G.

VAN DRIMMELEN, G. C. (1955). Strain 19 brucella vaccine. III. The route of inoculation and vaccinal reactions.—*J. S. Afr. vet. med. Ass.* 26, 113-121. 1538

The author discussed the literature on routes of injection of *Br. abortus* vaccine, and the strength of the vaccine. For use in South Africa, he recommended s/c administration, as being easier for unqualified assistants. Field tests showed that concentration of the dose (60×10^9 viable organisms) into 1 ml. instead of the usual 5 ml. produced abscesses and lasting swelling. A tenfold increase of the number of organisms produced extremely large swellings and, in one case, an abscess.

—I. W. JENNINGS.

YUSKOVETS, M. K. & KOLESOVA, A. I. (1955). [Trials of Strain 68 vaccine against brucellosis].—*Trud. nauchno-kontrol. Inst. vet. Preparatov.* 5, 84-93. [In Russian.] 1539

Twenty-five batches of aluminium hydroxide vaccine were prepared from Strain 68 *Br. abortus*. An average of 85% g. pigs were immune to challenge with *Br. melitensis* 30 days after vaccination; 85-100% mice were immune to challenge with *Br. abortus* after 20 days; and 80-85% sheep were immune to challenge with *Br. melitensis* 4 and 8 months after vaccination. The vaccine remained active and stable for at least 8 months at room temp. On 13 infected farms in various parts of the U.S.S.R., 4,145 cattle were vaccinated. Results for the individual farms indicate that abortions ceased, or were greatly reduced, after vaccination.—F. A. ABBEY.

VAN DRIMMELEN, G. C. (1955). Tetrazolium reduction as a rapid quality test for brucella vaccine.—*J. S. Afr. vet. med. Ass.* 26, 105-108. 1540

The author has developed a method of testing Strain 19 *Br. abortus* vaccine for viability by means of a reaction which depends on the enzyme activity of the organisms present. A small quantity of vaccine, ready for use, is diluted in saline and added to sterile powdered tetrazolium in a small ampoule; the mixture is then held at body temp. for 1-2 hours. Fresh vaccine and fully viable stored vaccine show a deep red colour in the ampoule, but there is no reaction with vaccine of low viability. Contaminated vaccine samples show marked colouring, or variable reactions.

—I. W. JENNINGS.

I. BUGEAC, T., CRISTESCU, M., LELUTIU, C. & MORARU, E. (1955). Cercetări asupra valorii metodelor de diagnostic serologic (RAL și RFC) și alergic în bruceloza porcină. [Value of serological and allergic methods for the diagnosis of porcine brucellosis].—*Anu. Inst. Pat. Igien. anim., București.* 5, 16-22. [In Roumanian. French and Russian summaries.] 1541

II. BUGEAC, T., CRISTESCU, M., LELUTIU, C. & MORARU, E. (1955). Diagnosticul brucelozei la taurine prin proba alergică cu brucelohidrolizat. [Diagnosis of brucellosis in cattle by the allergic test with brucella hydrolysate].—*Ibid.* 23-27. [In Roumanian. French and Russian summaries.] 1542

I. & II. The authors compared the results of the intradermal test using brucella

hydrolysate, with the agglutination test and the complement-fixation test for brucellosis. The results were not compared with P.M. findings. All 3 tests were positive in 17% of the pigs and 33% of the cattle, and all 3 were negative in 52% of the pigs and 33% of the cattle. The remaining animals reacted to one or two of the tests. This group included 12.5% of the pigs and 13.7% of the cattle which reacted only to the i/d test; these may have been false positive reactions. It was concluded that the combination of tests gave more accurate results and enabled a larger number of infected animals to be detected than any one of the tests used singly.—R.M.

VERGE, J., PARAF, A. & COMYN, M. (1955). Premier isolement d'une *Brucella* d'origine porcine en France. [First isolation of a *Brucella* of porcine origin in France.]—*C. R. Acad. Sci., Paris*, 241, 1355-1358. 1543

Br. suis was isolated from an aborted pig foetus during an outbreak of abortion in sows in the Nord department of France. The authors suggested that hares were the source of infection for pigs.—R.M.

BENDTSEN, H., CHRISTIANSEN, M. & THOMSEN, A. (1956). *Brucella suis* infection in hares as the cause of enzootic brucellosis in pigs.—*Nord. VetMed.* 8, 1-34. [In English. German and Danish summaries.] 1544

In Denmark four enzootic areas of *Br. suis* infection in pigs have appeared and been eliminated in the period 1929-55. The areas have been cleared by serological investigation followed by slaughter of reactors, an expensive but necessary procedure. Good evidence is presented that *Br. suis* in pigs in Denmark is derived from hares, strains from the latter being pathogenic for pigs, and typical of *Br. suis* in experimental animals, and in cultural and serological tests. During 1954, 35 of 613 killed hares gave positive serological reactions for brucella, and examination of 16 of the 35 reacting hares yielded cultures of *Br. suis*. The most frequently affected organs in the hare are testicles, uterus, mammary gland and spleen, but highly variable extension to other organs may occur. The lesions consist of rounded flattened discrete nodules containing firm pus or soft caseous necrotic tissue. Leporine brucellosis may be confused macroscopically with *Pasteurella pseudotuberculosis* and *Staphylococcus pyogenes* (aureus) infections, definite diagnosis being made only by cultural and serological tests.

—A. B. PATERSON.

KERSTEN, W. (1955). Zur Pathologie und Histologie der *Brucella suis* Infektion des Meerschweinchens und ihre diagnostische Bedeutung. [Pathology and histology of *Brucella suis* infection in the g. pig and its diagnostic significance.]—*Zbl. VetMed.* 2, 666-673. [English, French and Spanish summaries. Abst. from English summary.] 1545

In most cases there are quantitative differences in the gross and histological lesions in g. pigs infected with *Br. suis* compared with those infected with *Br. abortus*. These differences in some cases are not sufficient to distinguish the two types of brucella. Giant cells have no special significance in distinguishing the types. Histological examination of liver, spleen and lungs reveals a higher percentage of infected animals than does serological or cultural examination alone. In animals infected with *Br. suis* the first microscopic changes are visible after 1-2 weeks.

BRAHIC, J., TAMALET, J., MADET, P. & GIRAULT, A. (1955). Résultats comparés du séro-diagnostic de Wright et du test de Coombs dans la brucellose expérimentale du cobaye. [A comparison of the Coombs test with the agglutination test in experimental brucellosis in g. pigs.]—*C. R. Soc. Biol., Paris*. 149, 373-376. 1546

Antibodies to *Br. suis* in experimentally infected g. pigs were detected earlier and for a longer period by the use of the Coombs test than by the agglutination test. Higher, more easily read, titres were obtained and the prozone phenomenon did not occur.

—M. B. HAWKSLEY.

GODGLÜCK, G. & MARGGRAFF, I. (1955). Die Urease-Aktivität der *Brucella*-Bakterien. [Urease activity of brucella.]—*Zbl. VetMed.* 2, 656-665. [English, French and Spanish summaries.] 1547

Eighteen strains of *Br. suis*, 11 of *Br. melitensis* and 17 of *Br. abortus* were examined for urease content using the method described by Bauer, H. (1949) and a method using glycerol-urea-meat broth, both of which utilize methyl red as indicator. It was confirmed that *Br. suis* can be differentiated from other *Brucella* species by its superior production of urease, and that the methods are equally efficient in demonstrating urease activity.—A. B. PATERSON.

DIXIT, S. G. (1955). Note on a method of protecting fowls against spirochaetosis.—*Indian J. vet. Sci.* 25, 31-33. 1548

Blood from naturally occurring cases of spirochaetosis was treated with penicillin (30,000 i.u. per unit ml. of blood) after refrigeration for 14 or 21 days. Fowls injected with 0.5 ml. of this blood showed no symptoms when challenged 25 or 65 days later by the injection of infected blood.

—E. A. GIBSON.

KARAKAŠEVIĆ, B. (1955). Eine Leptospiroepidemie in Strumiza (Mazedonien, Jugoslawien). [An epidemic of leptospirosis in Strumiza, Macedonia.]—*Z. Hyg. Infekt-Kr.* 142, 27-37. 1549

An epidemic of leptospirosis occurred in 57 children, all of whom had bathed at a certain place in a river. K. suggested that cattle and pigs which drank from the river were the source of infection, but no animals were examined. Bacteriological examination of river water gave positive results.—R.M.

SZENESS, L. & BÍRÓ, Z. (1955). Leptospirosenherde in Ostungarn. [Foci of leptospirosis in eastern Hungary.]—*Acta microbiol. hung.* 3, 19-26. [In German. Russian summary.] 1550

Several outbreaks of leptospirosis are described, one in cattle, the others in school-children. The children developed the disease after bathing in water-courses frequented by cattle and pigs. In the affected cattle, 6 species of *Leptospira* were demonstrated. Of 195 wild mice, *L. pomona* and *L. sejroe* were demonstrated in two. Attempts to cultivate *Leptospira* from the urine of suspected cattle and pigs were unsuccessful.—M.G.G.

KASZA, L. & KEMENES, F. (1955). Komplementumkötési próba a szarvasmarhák és a lovak leptospirosis fertőzöttségének felismerésére. [Complement-fixation test for the diagnosis of *Leptospira* infection in cattle and horses.]—*Mag. állator. Lapja.* 10, 365-367. [In Hungarian. English and Russian summaries. Abst. from English summary.] 1551

The c.f. test was found to be more suitable than the agglutination test for the routine diagnosis of *Leptospira* infection in cattle and horses. It is quicker, and the antigens used in the c.f. test may be stored for longer periods.—M.G.G.

BRYAN, H. S. & BOLEY, L. E. (1955). Studies on leptospirosis in domestic animals. IV. Survival of *Leptospira pomona* in bovine semen extender. — *Mich. St. Univ. Vet.* 16,

27-29 & 55. [Authors' summary modified.] 1552

L. pomona survived in standard bovine semen diluent for a week at 5°C. but for one day only at 28°C. In media containing either 500 units of penicillin or 500 µg. of streptomycin per ml., leptospira survived for 7 days at 5°C., but only for one and two days, respectively, at 28°C. The potential danger of using semen from leptospira-infected bulls is discussed.

FAINE, S. & KAIPAINEN, W. J. (1955). Erythromycin in experimental leptospirosis.—*J. infect. Dis.* 97, 146-151. [Authors' summary and conclusions modified.] 1553

Various pathogenic leptospire are sensitive to concentrations of carbomycin attainable in blood and tissues. Early adequate treatment with carbomycin cured experimental infection with *L. icterohaemorrhagiae* in g. pigs and hamsters with a low carrier rate and without residual lesions. The toxicity of the drug for g. pigs and hamsters may obscure the results of treatment of experimental infection in these animals.

BYRNE, R. J., JAHNES, W. & GLEISER, C. A. (1955). Studies on experimental avian leptospirosis.—*Cornell Vet.* 45, 290-296. [Abst. from authors' summary.] 1554

In day-old chicks injected intra-abdominally with cultures of *L. canicola*, the organism persisted in the blood for up to 28 days. No symptoms developed, but leptospiral agglutinins were present in the blood serum in measurable titres 16-17 days after inoculation and persisted at a high level for about 50 days. Following 27 consecutive serial passages in chicks of infected chick blood the pathogenicity of the organism was unaltered. No inhibitory substances for leptospira were found in the serum or whole blood.

IVANOV, M. M. & SOBOLEV, A. A. (1955). [Investigation into the control of preparations used in leptospirosis.]—*Trud. nauchno-kontrol. Inst. vet. Preparatov.* 5, 131-137. [In Russian.] 1555

Cultures of 7 strains of leptospira isolated from horses, cattle or fur-bearing animals were found to be non-virulent for mice, g. pigs, adult rabbits, pigeons, lambs, calves, puppies and kittens. The addition of immune serum to cultures inhibited the growth of leptospira; serum having a lytic titre of 1:5-1:100 and an agglutinin titre of 1:400-1:600 prevented growth. In vaccinated animals, the spread of

a challenge dose of virulent leptospira from the site of injection was limited; the higher the lytic and agglutinin titres of the serum of the animal, the more limited was the spread of the organisms.—F. A. ABBEY.

LEBEDA, M. (1955). Lokální reakce po očkování trypaflavinovou leptospirosní vakcinou. [Local reaction following vaccination with a leptospiral trypaflavine vaccine.] — *Sborn. čes. Akad. zemědělsk. Věd, Živoč. Vyr.* 28, 613-616. [In Czech. German and Russian summaries.] 1556

An account of experimental work in g. pigs with a leptospiral vaccine containing trypaflavine. Several trypaflavine concentrations were tried and a 0.05% solution of acid salt of trypaflavine gave a marked local reaction without causing necrosis. The size of the local reaction was measured and the affected and neighbouring parts were examined histologically. L. stated that the character of the reaction depended largely on the concentration of the trypaflavine soln. in the vaccine, whereas the size was influenced by antigen, ballast substances in the vaccine and dosage. Local reaction disappeared within 3-6 weeks.

—E.G.

SZENT IVÁNYI, T. & SZABÓ, I. (1955). A malacok fertőző eihalásos bélgyulladás. I. A betegség oktana és kórtana. [*Clostridium welchii* Type C causing infectious necrotic enteritis in new-born piglets. I.]—*Mag. állator. Lapja*, 10, 403-407. [In Hungarian. Abst. from English and Russian summaries.] 1557

Necrotic enteritis in piglets is said to be the cause of losses of up to 70% among new-born piglets in some Hungarian piggeries. Death occurs as a rule 3-6 days after birth but not generally after the second week of life. P.M. there is emphysema of the intestinal wall and congestion of the jejunal mucosa with necrotic lesions caused by the toxin of *Cl. welchii* Type C, which was isolated from the intestines of dead piglets and the faeces of their dams. The condition was reproduced experimentally in piglets by oral administration of the isolated strains.—E.G.

I. WICKHAM, N. (1956). The production and inhibition of the haemagglutinin of *Cl. welchii*.—*J. comp. Path.* 66, 62-70. 1558

II. WICKHAM, N. (1956). The relationship of the haemagglutinin of *Cl. welchii* to other soluble antigens of this organism.—*Ibid.* 71-81. [Author's conclusions modified.] 1559

I. Haemagglutinins acting directly on the r.b.c. of various species were produced fairly readily by many strains of *Cl. welchii*. Their ability to produce haemagglutination (HA) appeared to be related to long continued cultivation on artificial media. The majority of recently isolated strains did not produce HA, and laboratory strains giving good titres of HA failed to do so when re-isolated after g. pig passage. After a variable period on artificial media, however, there was a spontaneous reversion to HA production. The haemagglutinin was specifically inhibited by *Cl. welchii* antisera. The effectiveness of any antiserum against the HA produced by the 4 toxigenic types A, B, C and D was almost equal; the haemagglutinin was therefore a group characteristic and not related to toxigenic types. Because of these findings, the HA inhibition test was of no value as a diagnostic aid.

II. The enzyme-destroying blood group substance A, and the enzyme-destroying virus receptors on red cells (R.D.E.) were found to be produced by strains of *Cl. welchii* belonging to the 4 types A, B, C and D; and their appeared to be a strong correlation between the production of each of these enzymes and of the haemagglutinin. Moreover the 3 activities could be inhibited by the same antisera to approx. the same titre. Other findings were that the HA enzyme produced panagglutination of r.b.c.—a phenomenon known to be produced by the R.D.E.; and that blood group substance A caused inhibition of the HA. The suggestion is made, therefore, that the 3 activities, haemagglutination, destruction of virus receptors and destruction of blood group substance A, are due to the same enzyme.

SHANKAR, K. & BARD, R. C. (1955). Effect of metallic ions on the growth, morphology, and metabolism of *Clostridium perfringens* s. I. Magnesium. II. Cobalt.—*J. Bact.* 69, 436-443 & 444-448. 1560

I. Of a variety of media rendered deficient in magnesium, only Evans peptone medium supported the growth of filamentous forms of *Cl. welchii*. It is suggested that this medium contains a cell division inhibitor, which is active in the absence of Mg. Metabolic studies revealed that the filamentous organisms ferment glucose at a reduced rate. The presence of various enzymes was demonstrated in bacteria-free extracts of both filamentous and normal forms.

II. The addition of cobalt to a medium supporting the growth of *Cl. welchii* gave rise to filamentous forms, which ferment glucose mainly to lactic acid. The inhibitory effect of Co was studied at 3 concentrations of added Mg. With increased concentrations of Mg, higher levels of Co were necessary, to be completely bacteriostatic. Large amounts of Co were required with larger culture inocula. Once growth had begun, very high concentrations of Co were required to halt growth.

—M.G.G.

PLASTRIDGE, W. N., EASTERBROOKS, H. L., WILLIAMS, L. F., KIGGINS, E. M. & WALKER, E. (1955). **Reproductive efficiency and serological findings in heifers experimentally infected with *Vibrio fetus*.**—*Amer. J. vet. Res.* **16**, 493-498. [Authors' summary modified.] **1561**

Infection, as shown by clinical evidence (abortion or apparent failure to conceive after 3 or more services, or both) and the presence of agglutinins in either the blood serum or cervicovaginal mucus or both, followed cervical exposure in all of 4 heifers, vulval exposure in 2 of 4 heifers, and contact exposure in each of 2 heifers and in one of the 2 heifers that failed to develop serological evidence of vibriosis following vulval exposure. Four to 12 weeks were required for the development of significant levels of agglutinins in the blood and cervicovaginal mucus following cervical exposure. Recovery, as indicated by conception after 1-3 services followed by a normal gestation and a decline in serum and cervicovaginal mucus titres, occurred within 8-14 months in 5 of 8 heifers that became infected and were retained in the experiment. Infection persisted in one heifer for the 18 months of observation. Two appeared to recover after 10-12 months, but later either became re-infected or latent infection became reactivated. ["Contact" in this small experiment was possibly closer than would normally occur in as much as all the heifers were repeatedly handled for collection of vaginal mucus samples. Further work will be necessary to ascertain whether infection by contact occurs under field conditions.]

HUBRIG, T. & WOHANKA, K. (1956). **Serologische und biochemische Untersuchungen an Vibrionen. [Serological and biochemical research on *Vibrio* strains from cattle.]**—*Berl. Münch. tierärztl. Wschr.* **69**, 4-7. [English summary.] **1562**

Thirty-one strains of *Vibrio* were

isolated from the genital tracts of bulls and cows and 29 from cattle fetuses. With two exceptions, sera from each group failed to agglutinate the antigens of the other group, and the serological classification corresponded with catalase production by the pathogenic foetal strains and H₂S production by the non-pathogenic strains from the genital tracts.

—A. B. PATERSON.

ROLLE, M., MUNDT, W. & ZINTZ, G. (1955). ***Vibrio jejuni* als Enteritiserreger beim Rind. [V. jejuni enteritis in cattle.]**—*Tierärztl. Umsch.* **10**, 391-392. **1563**

Of 200 calves 8 had vibrios in the duodenum and faeces; of 500 cattle *V. jejuni* was found in 31. The vibrios were similar to the *V. jejuni* described by Jones *et al.* [*V.B.* **1**, p. 207] from cattle with dysentery in the U.S.A. It is highly probable that the organism is causally related to diarrhoea in cattle.

—W. R. BETT.

THORNBERRY, H. (1955). **The control of foot-rot in sheep.**—*Irish vet. J.* **9**, 226-231. **1564**

On two farms 230 feet of 427 sheep were affected with foot rot in April. Comparative trials were carried out with 10% tincture of chloramphenicol, 50% pure formol, copper sulphate soln., and a proprietary ointment containing copper. Chloramphenicol gave the best results, 95 of 150 feet treated being cured by one or two applications. The tabular details given are difficult to correlate with the text, but it would appear that only 2 of 8 feet, treated once with formol, responded; 4 of 10 treated once or twice with CuSO₄, and 7 of 14 treated once with the proprietary ointment, were cured.—C. C. BANNATYNE.

SEELE & LAUER. (1955). **Sprosspilze als Krankheitserreger, insbesondere im Euter-gewebe bei Kühen. [Yeasts as a cause of disease, particularly in the udder of the cow.]**—*Mh. Tierheilk.* **7**, 94-102. **1565**

A chronic mastitis caused by a yeast affected the left hind quarter of a young cow a few weeks after calving and failed to respond to antibiotics. The supramammary lymph node was enlarged and the infection was suspected clinically of being tuberculous. The cultural and microscopic features of the organism are described. Oral and subcutaneous administration of cultures to mice and g. pigs yielded negative results.

—E. G. WHITE.

KAUKER, E. (1955). Über Mastitis-Blastomyceten. [Mastitis caused by blastomycetes.] —*Berl. Münch. tierärztl. Wschr.* **68**, 407-409. [English summary.] **1566**

According to K., mastitis caused by yeasts is characterized by enlargement and oedema of the udder, enlargement of the supramammary lymph nodes, fever, and greyish-white slimy milk. From 3 of such cases *Saccharomyces fragilis* was isolated twice and *Hansenula anomala* once. *Candida* spp., although not yeasts, were isolated from 4 other cases.

—R.M.

GALLI, A. & CONFORTI, (1954). Il "Microsporium cornua bovis" negli allevamenti Maremmani. [A horn disease of cattle (caused by "Microsporium cornua bovis") in Maremma, Italy.]—*Ann. Fac. Med. vet. Torino*. **4**, 169-181. **1567**

A horn disease peculiar to range cattle on the Maremma plains is described. The condition occurs in animals 2-3 years old and is unilateral as a rule; it is an annular erosion of the horn about 4-5 in. from the tip [about the level of the tip of the horn core]. The lesion may start on the exterior and extend inwards or *vice versa* and the portion above it falls off in 1-3 months leaving the horn core exposed. A microsporium (named *M. cornua bovis* by the authors) was obtained in culture. Material containing spores of this fungus was grafted on healthy horns and 50 days later spores and mycelial filaments (taken as evidence of the process of reproduction) were recovered from one of the first experimental animals treated. Experiments were still in progress at the time of writing but the above results were considered to indicate that the microsporium is the causal agent.—T.E.G.R.

WALKER, J. (1955). Possible infection of man by indirect transmission of *Trichophyton discoides*.—*Brit. med. J.* Dec. 10th, 1430-1431. [Author's summary modified.] **1568**

Hairs infected with *T. discoides* were found on a scratching-post used by cattle infected with ringworm. The parasitic spores in infected hair survived for 15 months or longer when stored in the lab. at room temp. *T. discoides* grew on sterilized soil and cow dung inoculated with infected hairs or with active cultures, and incubated at 26°C. On the cow dung and on one of the soil samples a conidial form of the fungus developed. It was tentatively concluded that under natural conditions infection may occur either by parasitic spores of the fungus that have

survived in inanimate material, or by conidia formed as the result of saprophytic growth in soil and animal droppings.

KANE, G. J., DOWNING, W. & WILSDON, A. J. (1955). Mycotic dermatitis in Great Britain. —*Vet. Rec.* **67**, 779. **1569**

The authors report the occurrence of mycotic dermatitis (*Actinomyces dermatonomus* infection) in Clun Forest sheep in Somerset in 1954 and widespread outbreaks in several breeds in 1955. Lesions apparent after shearing consisted of a scab 3 mm. or more deep, chiefly on the back and flanks. This scab was carried up as the wool grew and was thought to be a reservoir of infection, producing recurrence of the disease under extremely wet conditions.—P. K. C. AUSTWICK.

OSBORNE, H. G. & ENSOR, C. R. (1955). Some aspects of the pathology, aetiology, and therapeutics of foot-rot in pigs.—*N.Z. vet. J.* **3**, 91-99. **1570**

This disease, which is prevalent in all pig raising areas of New Zealand, is a specialized type of necrotic ulcer (ulcerative granuloma) associated with a spirochaete and a fusiform organism. The primary lesion is a necrotic sinus generally affecting the lateral digits of pigs most commonly between 2-5 months of age in October and November. It was observed to occur more frequently in cross breeds and on solely milk feeding farms. The main predisposing factor is damage to the hooves from constant wear on concrete floors and hard stony paddocks. Whilst the disease may become arrested at any stage, a single injection of 600,000 units of procaine penicillin is effective treatment.—A. ACKROYD.

I. HARTLEY, W. J., JEBSON, J. L. & MCFARLANE, D. (1955). Some observations on natural transmission of ovine brucellosis. —*N. Z. vet. J.* **3**, 5-10. **1571**

II. BUDDLE, M. B. (1955). Observations on the transmission of brucella infection in sheep.—*Ibid.* 10-19. **1572**

I. & II. Rams were shown to acquire infection with the ovine brucella-like organism described by Buddle [*V.B.* **23**, 3293; **25**, 1596] after contact with infected rams and following service of ewes previously served by infected rams. They did not become infected when born to, and reared by, infected ewes, nor when mated to ewes experimentally infected in their first pregnancy. Ewes were susceptible to infection by the oral route in early pregnancy, but the majority of ewes

experimentally infected in their first pregnancy lambed normally subsequently. Ewes appeared resistant to natural infection. Neither ewes nor rams appeared to acquire infection from contaminated pastures.—M. B. HAWKSLEY.

I. JEBSON, J. L., HARTLEY, W. J., MCCLURE, T. J. & MCFARLANE, D. (1955). **Pathology of brucellosis in rams in New Zealand.**—*N.Z. vet. J.* **3**, 100-104. 1573

II. DODD, D. C. & HARTLEY, W. J. (1955). **A specific suppurative epididymitis of rams.**—*Ibid.* 105-110. [Authors' summaries modified.] 1574

I. The authors described the gross and microscopic appearance of the genital organs of rams affected with the epididymitis complex. Periodic examination of the semen of 42 naturally affected rams was carried out for 8 months. Half of the rams were excreting a brucella-like organism described by Buddle & Boyes [*V.B.* **23**, 3293] in their semen. Of the latter, none gave good quality semen, whereas 7 affected rams, apparently not excreting the organism, gave semen of good quality.

II. A suppurative epididymitis of young rams is described. It is characterized clinically by a raised temperature, pain, and gross enlargement of the affected side of the scrotum, and a systemic reaction. The onset is sudden, and death may occur within a week. In some cases there is rupture of the scrotum and discharge of purulent material. The lesion consists primarily of an abscess in the epididymis and subjacent tunics in which there is profuse formation of a thick yellowish green pus. Preliminary bacteriological tests have isolated from the semen and pus of affected rams a Gram-negative, bi-polar staining, pleomorphic bacillus which appears to be the same in all cases; it is not *Past. pseudotuberculosis* as described by Jamieson & Soltys [*V.B.* **18**, 657]. The infection has been successfully transmitted to rams and the same organism recovered.

GDOVIN, T., HRUDKA, F., CHLÁDECKY, F. & KOPPEL, Z. (1955). **Infekční epididymatida baranov na strednom Slovensku. [Infectious epididymitis in rams in Slovakia.]**—*Sborn. čes. Akad. zemědělsk. Věd, živoč. Vyr.* **28**, epiz. Dis. Afr. **3**, In English: pp. 222-225. summaries.] 1575

A report on preliminary work in connexion with an outbreak of infectious epididymitis in about 50 rams in Slovakia, where the disease had not occurred previously.

Clinical aspects and pathology of spontaneous infection in rams and of experimental infection by intratesticular inj. of infective material in rams and goats were described. Experimental infection was unsuccessful in boars, immature male sheep and goats, mice and g. pigs. Details are given of a, so far, unidentified Gram-negative, rod-shaped micro-organism isolated from infected testicular material and epididymis.—E.G.

GUTSCH-WEISS, E. (1955). **Exitusfälle nach Schafbadungen. [Death in sheep following dipping.]**—*Tierärztl. Umsch.* **10**, 141-142. 1576

Insecticides now in common use for sheep dipping have no bactericidal action and, as dipping proceeds, the dip may become heavily contaminated with pathogenic bacteria. A bactericidal agent should, therefore, be added to the dip or a method used whereby fresh dip is available to individual animals.

—J. A. NICHOLSON.

MENDES, A. M. (1955). **A study on contagious bovine pleuropneumonia in Angola.**—*Bull. epiz. Dis. Afr.* **3**, In English: pp. 222-225. In French: pp. 288-292. [Author's summary modified.] 1577

An account of studies in progress at the Nova Lisboa (Angola) laboratory, on bovine contagious pleuro-pneumonia. They deal with attenuation of the causal organism and the effect on antigenicity, the action of penicillin, ethyl alcohol and mercurochrome on the organism, the Willems phenomenon, adaptation of the organism to rabbits and the preparation of a new vaccine.

POPOVICI, I., TAGA, M. & CRISTET, I. (1955). **Vaccinarea intradermică cu germenii vii împotriva agalaxiei contagioase a oilor și caprelor. [Intradermal inoculation of living organisms of contagious agalactia of sheep and goats, as a method of controlling the disease.]**—*Anu. Inst. Pat. Igien. anim., București.* **5**, 82-87. [In Roumanian. French and Russian summaries.] 1578

During 1954, 83,000 sheep were inoculated i/d with 0.2 ml. of a broth culture of the organism of contagious agalactia. Inoculated sheep proved to be immune for at least one subsequent lactation. In ewes in flocks free from the disease, inoculation caused a drop of 3-5% in milk production, mammary oedema and qualitative changes in the milk on the 3rd-7th days after inoculation. In flocks where

the disease had broken out, there were no further cases 8-10 days after inoculation. I/d injection was tolerated better than s/c injection.—R.M.

- I. CECCARELLI, A. & AGRIMI, P. (1955). Segnalazione clinica e trasmissione sperimentale della malattia cronica respiratoria dei polli (chronic respiratory disease.) [Clinical picture and transmission of avian chronic respiratory disease.] — *Zooprofilassi*, 10, 531-541. [English and French summaries.] 1579

- II. TOZZINI, F. (1955). La malattia cronica respiratoria dei volatili. [Chronic respiratory disease of fowls.]—*Ibid.* 560-571. 1580

I. An account of an outbreak in the province of Massa, Italy, of a disease of fowls resembling the chronic respiratory disease described by American workers. Chicks aged 18-20 days were affected. Pleuropneumonia-like organisms were isolated from nasal exudate. The disease was reproduced in chicks and in embryos by the inoculation of material from affected birds and from cultures.

II. A review of the literature on chronic respiratory disease by North American workers (66 refs.).—R.M.

See also absts. 1739 (blood proteins in cattle with leucosis, brucellosis and TB.); 1751 (gut oedema and vibronic dysentery in pigs); 1830 (report, Great Britain); 1832 (report, Western Australia); 1834 (report, Nigeria); 1835 (report, Uganda).

DISEASES CAUSED BY PROTOZOAN PARASITES

- EAST AFRICA HIGH COMMISSION. (1955). Annual report of the East African Tsetse and Trypanosomiasis Research and Reclamation Organization for 1954-1955. [FORD, J.] pp. 62. Nairobi: East Africa High Commission. 1582

The title of the organization is being changed to the East African Trypanosomiasis Research Organization to emphasize its main function which is to control the tsetse-borne diseases of men and animals of the East African territories.

The Director states that 280,000 square miles of the total of 640,000 square miles are infested by tsetse fly. Most of this is in Tanganyika and Uganda. Clearing and cultivation of infested land has so far been the only method which has given beneficial results. This needs a large expenditure and a great increase in the present population and also of the money available. Various pilot reclamation schemes are in progress.—J. A. GRIFFITHS.

- MARTÍNEZ, M. G. (1955). Contribución al estudio de la flora bacteriana genital de la vaca y su influencia en la esterilidad. [Bacterial flora of the genital tract of the cow and its relation to sterility.]—*Rev. Patron. Biol. anim., Madrid*, 1, 301-348. 1581

Samples of cervical mucus, were collected from cows either immediately before artificial insemination or already inseminated but awaiting treatment for sterility. After elimination of cows in which detailed clinical examination disclosed the cause of sterility, 157 samples remained, of which 57 were from sterile cows. Bacteria were isolated from all except 17 of the fertile and from all of the sterile cows. The normal flora included 12 species; M. listed them in a table in order of incidence, which ranged from 22.9% to 2.9%; these species were also present, but their incidence was lower, in the sterile cows. The pathological flora (confined to the sterile cows) included the following:—*Streptococcus pyogenes* var. *aureus* (isolated from 17 cows); *Brucella abortus* (from 14), *Corynebacterium pyogenes* (8), *Str. zooepidemicus* (6), *Neisseria perflava* (5), *C. renale* (4), *Bacterium coli* (2), and *Str. anaerobius* (2). —F.E.W.

- JACKSON, C. H. N. (1955). The natural reservoir of *Trypanosoma rhodesiense*. — *Trans. R. Soc. trop. Med. Hyg.* 49, 582-587. [Author's summary modified.] 1583

While J. was engaged on tsetse research in different places closed to settlement on account of sleeping sickness, 27 Africans became infected with *T. rhodesiense*. Details of 3 cases are unfortunately lacking. In addition a strain of *T. rhodesiense* was obtained from a wild *G. pallidipes*. Most of the cases occurred about Kakoma in Tanganyika, 8 of them in camps some miles removed from any permitted route. On this experience, J. is convinced that wild animals must form a reservoir of the disease in nature, as they have been shown to do experimentally in captivity.

- I. GEORGESCU, L. & CIOLCA, A. (1955). Cercetări referitoare la acțiunea preventivă a anticycidului pro-salt față de durina europeană. [Action of anticycide pro-salt on

- dourine.]-*Anu. Inst. Pat. Igien. anim., București*, 5, 206-214. [In Roumanian. French and Russian summaries.] 1584
- II. GEORGESCU, L., SÎRBU, P. & SOBINEVSCHI, V. (1955). Cercetări asupra posibilității de transmitere a durinei prin montă în urma tratamentului cu metylsulfat de antrycid. [Possibility of transmission of dourine by copulation after treatment with antrycide methylsulphate.] — *Ibid.* 215-218. [In Roumanian. French and Russian summaries.] 1585
- I. A single s/c inj. of 3.5-4.6 g. antrycide pro-salt (prophylactic inj. of quinapyramine) protected stallions from artificial infection with *Trypanosoma equiperdum* for at least 90 days. The inoculation of trypanosomes 120 days after administration of the drug resulted in subclinical infection. In field experiments carried out during the breeding season, 51 stallions given a single inj. of the drug, repeated if necessary after 90 days, did not become infected. Abscesses developed at the site of injection in 4% of treated horses. To ensure complete control of the disease, it was suggested that the drug be administered to mares on the day of service.
- II. Dourine was not transmitted from infected mares which had been treated with antrycide methylsulphate (quinapyramine sulphate) 18 to 428 days previously, even when the complement-fixation test was positive at the time of service.—R.M.
- CORRIAS, A., MARCHISIO, M. & MOLINARI, G. (1955). Bonifica del materiale seminale infetto da *Trichomonas genitalis bovis*, mediante l'aggiunta del 10% di glicerina. [Elimination of *Tr. foetus* from diluted semen by the addition of 10% glycerol.]—*Vet. ital.* 6, 983-991. [English, French and German summaries.] 1586
- The authors claimed that *Tr. foetus* was killed in diluted bull semen containing 10% glycerol, after storage for at least 24 hours at 5°C. Motility of the spermatozoa was unaffected by the glycerol.—R.M.
- UHLENHUTH, P. & SCHOENHERR, K.-E. (1955). Untersuchungen über die Übertragungsmöglichkeiten verschiedener Trichomonadenarten auf kleine Versuchstiere. [Attempted transmission of trichomonads to small laboratory animals.]—*Z. ImmunForsch.* 112, 48-56. 1587
- The authors infected female hamsters intravaginally with *Trichomonas foetus* and *Tr. vaginalis*. The organisms were not recovered from blood and organs but remained localized in the uterus and vagina without affecting conception and pregnancy. They could be recovered from the vaginal mucus of some of the animals even one year after infection. Experimental infection of male hamsters and both male and female g. pigs and rabbits was unsuccessful.—E.G.
- LUNGU, V., BRĂTESCU, A., CIOLCA, A., POPA, M., GĂINĂ, V. & BĂRBULESCU, M. (1955). Cercetări asupra eficacității antrycidului și fenotiazinei în tratamentul trichomoniaziei bovine. [Effectiveness of antrycide and phenothiazine in the treatment of bovine trichomoniasis.] — *Anu. Inst. Pat. Igien. anim., București*, 5, 231-237. [In Roumanian. French and Russian summaries.] 1588
- The authors claimed 90% cures following the treatment of cows with trichomoniasis by the oral administration of 5 doses of 0.2-0.3 g. phenothiazine at intervals of 3-5 days. This treatment was ineffective in infected bulls. Antrycide methylsulphate (quinapyramine sulphate) was only 50% effective in cows and was not effective in bulls.—R.M.
- BARBER, C. W. (1955). Nicarbazin in the prevention of coccidiosis in chickens. — *Cornell Vet.* 45, 360-366. 1589
- "Nicarbazin" (a molecular complex of 4,4' - dinitro - carbanalide - 2 - hydroxy - 4,6 dimethyl-pyrimidine) was given at the rate of 0.02% of the ration to 3-week-old chicks experimentally infected with *Eimeria tenella*. The treated birds showed no mortality, caecal damage or loss of weight gain. The treatment did not prevent the development of an immunity, nor did it depress the wt. gain of uninfected chicks. Similar results were obtained in experimental infections with *E. tenella* and *E. acervulina* when the drug was fed at 0.015% of the ration. At 0.0125, 0.01 and 0.0075% it also conferred protection against massive doses of both species of coccidia.—E. A. GIBSON.
- SZABUNIEWICZ, M. (1955). Considérations sur la prophylaxie et le traitement de la coccidiose aviaire au Katanga. [Prevention and treatment of avian coccidiosis in the Belgian Congo.]—*Bull. agric. Congo belge*, 46, 1407-1442. [In French. Flemish summary.] 1590
- Various methods of poultry husbandry were discussed in relation to their ability to prevent coccidiosis. Sulphonamides and derivatives of nitrofurazone were considered

in detail as prophylactic and as curative drugs. Tetramethylthionine was found to cure coccidiosis and improve the body condition of the bird.—JAS. G. O'SULLIVAN.

CUCKLER, A. C. & MALANGA, C. M. (1955).

Studies on drug resistance in coccidia. — *J. Parasit.* **41**, 302-311. [Authors' summary modified.] **1591**

Studies on 40 field strains of allegedly resistant coccidia revealed that 17 were sensitive to one or more of the drugs studied, but that 13 were resistant to nitrophenide, 18 to sulphaquinoxaline and 17 to nitrofurazone. Some of the strains were resistant to all of these anti-coccidial drugs, while others were resistant to two. In some strains specific resistance was observed, but cross-resistance occurred more frequently than specific resistance. In view of the generally satisfactory use of anti-coccidial medication, it does not appear probable that development of resistance in coccidia has become an important practical problem as yet. Experimentally induced resistance was demonstrated in one strain of *Eimeria acervulina* and in 2 strains of *E. tenella*, after exposure to sub-optimal dosages of sulphaquinoxaline for 15 serial passages. There was no evidence that one strain of caecal coccidia exposed to sub-optimal dosages of nitrophenide, nitrofurazone or nicarbazin for 15 serial passages has become less sensitive to these anticoccidial agents. Nicarbazin inhibited all strains of coccidia whether sensitive or resistant to other agents. Coccidia which were markedly resistant to sulphaquinoxaline, nitrophenide, nitrofurazone, and sulphamerazine were completely susceptible to nicarbazin.

KOZNOV, N. A. (1955). [*Babesia infection in foals.*]—*Veterinariya, Moscow*, **32**, No. 3, pp. 53-54. [In Russian.] **1592**

K. reported fatal *B. caballi* infection in 3 foals 3, 4 and 6 weeks old. He recommended that measures against the tick vector should include the dressing of foals as well as adult horses with D.D.T. or benzene hexachloride.

—R.M.

ABRAMOV, I. V. (1955). [*Viability of Babesia caballi organisms in Hyalomma plumbeum.*]—*Veterinariya, Moscow*, **32**, No. 3, pp. 42-46. [In Russian.] **1593**

The author reported the discovery of *B. caballi* in smears of eggs and adults of *H. plumbeum*. He stated that this tick is the only known vector of *B. caballi* in the southern

zone of the U.S.S.R. The shape and size of the organisms in *H. plumbeum* were very varied and differed from those observed in *Dermacentor. B. caballi* lived in *H. plumbeum* for up to 7 generations of the tick.—R.M.

TOKIN, I., NEVENIĆ, V., ŠIBALIĆ, S., CVETKOVIĆ, L. & PEKOVIĆ, B. (1955). Epizootija piroplazmoze ovaca u selu Idvoru. [*Piroplasmosis in sheep in Yugoslavia.*]—*Vet. Glasn.* **9**, 790-796. [In Croat.] **1594**

During an outbreak of *Babesia ovis* infection in a Yugoslav village in 1955, of 3,611 sheep 1,590 fell ill, and 351 died. The outbreak was controlled by quinuronium sulphate ("acaprine"), a diguanyl-diazoaminobenzene derivative ("berenil") and dipping.

—E.G.

I. SHMULEVICH, A. I. (1955). [*Large-scale trials with "tiargen" (sodium silver pentathiosulphate).*] — *Trud. nauchno-kontrol. Inst. vet. Preparatov.* **5**, 245-246. **1595**

II. DYĻ'KO, N. I. (1955). [*Treatment of Babesia infection in cattle with "tiargen" (sodium silver pentathiosulphate).*]—*Ibid.* 269-272. [In Russian.] **1596**

I. "Tiargen" was administered i/v at a dosage of 0.01 g./kg. body wt. in a 1-2% aq. soln. to 2,500 cattle with *Babesia*, *Theileria* or *Leptospira* infection, and 22 horses and 384 sheep with *Babesia* infection. The percentage of recoveries was 97% in *Leptospira* infection, 70-100% in *Babesia* infection, and 51-80% in *Theileria* infection. The drug was similarly administered prophylactically to 300 cattle: 4-10% subsequently developed *Babesia* infection, compared with 18% untreated controls, and none developed *Theileria* infection, compared with 4% of the controls.

II. Six hours after the i/v injection of the drug at the same dosage in cattle with *Babesia* infection, the organisms in the blood began to assume anaplasmod forms and decreased in number by 73%; after 30 hours they had decreased by 89%. Haemoglobin did not completely disappear from the urine until 3 days after treatment.—F. A. ABBEY.

CARSTENSEN, H.-C. (1954). Ein Beitrag zur Toxoplasmose beim Hund. [*Canine toxoplasmosis.*] — *Inaug. Diss., Hanover*, pp. 96. **1597**

C. discussed the symptoms and pathology of 54 recorded cases of spontaneous toxoplasmosis in the dog, and included one original observation of a similar case. He also recorded clinical and P.M. findings in 22 experimentally

infected dogs, and compared the findings in the two groups. The value of serological methods of diagnosis over direct methods is confirmed by figures of previous workers. Of 7 dogs with a positive titre to the Sabin-Feldman or complement-fixation test, 3 had an intercurrent distemper infection, and none had typical lesions, or toxoplasms.

—M. L. CLARKE.

WALZL, H. (1955). Ein Beitrag zur Toxoplas-mose des Hundes. [*Toxoplasma infection in a dog.*]—*Wien. tierärztl. Mschr.* 42, 642-652. [English, French and Italian summaries.] 1598

P.M. examination of an 11-month-old dog which died from subacute toxoplasma infection, revealed a meningoencephalitis and a haemorrhagic encephalomalacia as well as a catarrhal - purulent broncho - pneumonia.

See also *absts.* 1775 (sulphaquinoxaline poisoning in chickens); 1833 (report, Kenya); 1834 (report, Nigeria); 1835 (report, Uganda); 1837 (report, (Northern Borneo).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

FLÜCKIGER. (1955). A propos de la Convention sanitaire internationale pour la prévention de la fièvre aphteuse. [*Concerning the International Health Convention for the prevention of foot and mouth disease.*]—*Rec. Méd. vét.* 131, 696-700. 1600

F. recommends the adoption of the suggestion of the French Ministry of Agriculture, that there should be a World Convention of Foot and Mouth Disease, with the object of control and ultimate eradication on a world-wide scale.—I. W. JENNINGS.

BARBONI, E., ROMANELLI, V. & RONCALLI, R. (1954). Sopra il comportamento della istaminemia nell'afra epizootica sperimentale del bovino. [*Histaminaemia in experimental foot and mouth disease in cattle.*]—*Ann. Fac. Med. vet. Torino.* 4, 403-407. [English and French summaries.] 1601

There was an appreciable increase in the histamine content of the blood of 3 cattle infected by the lingual route with mouse-adapted F. & M. disease virus type O. This increase was apparent at the 5th hour and reached its maximum between the 12th and 36th hours, returning to normal by the 48th hour.—T.E.G.R.

ESPINET, R. G. (1955). Vacunación e inmunidad antiaftosa. [*Foot and mouth disease immunization.*]—*Gac. vet., B. Aires.* 17, 148-154. 1602

Granulomas were present in the lung and liver. Permeability disturbances were found in the hepatic veins. Pseudocysts were found in the c.n.s.—D. POYNTER.

PROST, E. (1955). Przypadek wybroczyn krwotocznych w mięśniach świni spowodowany przez cewy Mieschera. [*Muscular haemorrhages in pork caused by sarco-sporidia.*]—*Méd. vét., Varsovie.* 11, 671-672. [In Polish. English and Russian summaries.] 1599

Microscopic examination of ecchymoses in the muscles of a slaughtered pig revealed calcified Miescher's tubes (myositis sarco-sporidica) surrounded by a wall of granular tissue crowded with leucocytes and erythrocytes. The muscular ecchymoses were considered to have appeared during slaughter.

—M. GITTER.

Despite more than 10 years of mass immunization on many millions of cattle, F. & M. disease is still a problem in Argentina. Outbreaks continue to occur and they are not always caused by new variants nor by strains with increased virulence. E. considers that a satisfactory immunity can be built up only by strict adherence to a chain system of immunization in which the links are regular time intervals between vaccinations, and that in Argentina these intervals should not exceed 4 months; he considers that it is when they are allowed to lengthen that breaks in immunity occur which appear to be otherwise inexplicable. Only those animals which have been vaccinated at least 6 times at the correct intervals, counting from the vaccination coincident with weaning or from their first vaccination, can be considered as having built up a solid basic immunity, and only then should the links in the chain be permitted to lengthen.

—F.E.W.

SCHMIDT, S. & HOLM, P. (1955). Eksperimentelle undersøgelser over den immuniserende virkning af vacciner mod mund- og klovesyge indeholdende flere virustyper. [*Polyvalent foot and mouth disease vaccines.*]—*Dansk Maanedsskr. Dyrlaeg.* 63, 389-401. [English summary.] 1603

A strong immunity was produced in adult cattle by injecting 20 ml. of a divalent vaccine containing A₅ and C virus types. In cows,

heifers and calves doses of respectively 60, 40 and 30 ml. resulted in a strong immunity lasting over 14 months in the case of the cows, but only partial immunity lasting about 10 months for the heifers, and about 6 months for the calves. A tetravalent vaccine produced immunity for all 4 types of virus, but the immunity was not lasting.—M.G.G.

FOGEDBY, E., RANDRUP, A. & WEHMEYER, P. (1955). Tørring af MK-vaccine. [**Drying of foot and mouth disease vaccine.**]—*Dansk Maanedsskr. Dyrlæg.* **63**, 402-407. **1604**

Preparation of a dried F. & M. disease vaccine is described. It had the same degree of immunizing effect as equivalent amounts of control vaccines, and retained its quality after 3-7 months' storage at 2° to 4°C.

—F. R. PAULSEN.

SELLERS, R. F. (1955). **Growth and titration of the viruses of foot-and-mouth disease and vesicular stomatitis in kidney monolayer tissue cultures.**—*Nature, Lond.* **176**, 547-549. **1605**

Dulbecco (1952) had developed a method of virus titration, using equine encephalomyelitis and poliomyelitis virus. This involves the counting of plaques formed by the destructive action of the virus on susceptible cells, grown as a monolayer in tissue culture. S. investigated the application of this method to F. & M. disease virus, using 2 strains, M 11 and C 997. Tissue cultures were prepared from calf kidney and pig kidney. Both strains behaved similarly on calf kidney monolayers, producing small clusters of necrotic tissue surrounded by healthy cells. Destruction was not sufficient for plaque production. In pig kidney cultures, both strains destroyed all epithelial cells, but not fibroblasts. The monolayer was covered with an agar overlay, and examination after 48 hours' incubation revealed the formation of plaques. There appeared to be a relationship between the number of plaques and the virus concentration. Vesicular stomatitis virus, strain Md.C., when grown on calf kidney and pig kidney tissue cultures, destroyed all cells, including fibroblasts. S. mentioned, but did not describe in detail, plaque formation by this latter virus on ox-embryo kidney tissue cultures.

—C. C. BANNATYNE.

DEMPSHER, J., LARRABEE, M. G., BANG, F. B. & BODIAN, D. (1955). **Physiological changes in sympathetic ganglia infected with pseudo-**

rabies virus.—*Amer. J. Physiol.* **182**, 203-216. **1606**

About 2 days after the injection of Aujeszky's disease virus into the vitreous humour of one eye, rats began to scratch around the eye, and the virus could be recovered from the ipsilateral superior cervical ganglion. Histological changes characteristic of this virus were evident in the ganglion cells, and many of these began spontaneously to discharge intermittent groups of impulses, at first over the postganglionic nerve, and later also, simultaneously, over the preganglionic fibres. Finally the postganglionic nerve became silent and synaptic transmission failed, but impulses continued to be discharged over the preganglionic nerve. The spontaneous activity continued when the ganglion was excised and when it was cooled to room temp. Infection in the sympathetic ganglion may render presynaptic fibre terminations hyperexcitable so that a spontaneous impulse generated in one can spread to others and result in the discharge of a group of impulses. These findings may explain certain symptoms which occur in virus diseases.—A. ACKROYD.

ȚAGA, M., CRISTET, I. & COMAN, I. (1955). Studiul acțiunii unor factori chimici, fizici și biologici asupra virusului bolii lui Aujeszky. [**Action of some chemical, physical and biological factors on the virus of Aujeszky's disease.**]—*Anu. Inst. Pat. Igien. anim., București.* **5**, 131-138. [In Roumanian. French and Russian summaries.] **1607**

The authors employed a suspension of mouse brain containing 400-500 m.l.d. of the virus per ml. The virus was killed by exposure to ultra-violet light for 1 min., or by the action of 1:8,000 crystal violet for 24-48 hours, or by the addition of an equal vol. of trypsin soln. containing 12,500 units of enzyme activity, for 1 hour. Methylene blue, at a conc. of 1:100 had no action on the virus.—R.M.

BÉLÁDI, I. & SZÖLLÖSY, E. (1955). **Production of plaques in monolayer tissue culture by Aujeszky-disease (pseudorabies) virus.**—*Acta microbiol. hung.* **3**, 213-217. [Russian summary. Authors' summary modified.] **1608**

Monolayer tissue cultures prepared from chick embryos proved suitable for estimating the number of Aujeszky's-disease virus particles. Adequately diluted virus material kept in contact with the cell layer caused circumscribed necrotic foci to be formed. The

infective particle count, by this method, agreed well with the titre determined by serial dilutions in chick embryo tissue cultures.

POPOVICI, I., TAGA, M. & BERBINSCHI, C. (1955). Vaccinarea contra bolii lui Aujeszky la porci. [Vaccination against Aujeszky's disease.]—*Anu. Inst. Pat. Igien. anim., Bucureşti*. 5, 123-130. [In Roumanian. French and Russian summaries.] 1609

The authors' vaccine consisted of a virulent suspension of the brains of infected sheep, adsorbed on aluminium hydroxide. It was non-pathogenic for rabbits and sheep when administered intramuscularly, but was pathogenic when given intracerebrally. Twenty out of 31 pigs inoculated subcutaneously with 3-5 ml. of the vaccine resisted the intracerebral inj. of virulent virus 21 days later, whereas the controls died. In field outbreaks, mortality from Aujeszky's disease ceased 14-15 days after vaccination of the herd. The vaccine was safe for sows up to the 2nd month of pregnancy. Inoculation of the vaccine caused clinical cases of the disease in pigs recently inoculated with other vaccines, such as swine fever vaccine.—R.M.

PELLISSIER, A. (1955). Considérations sur la rage en A.O.F. (A propos de 82 cas dont 4 humains). [Some features of rabies in French West Africa.]—*Bull. Soc. Pat. exot.* 48, 458-463. 1610

From 1947-53, 82 cases of rabies were diagnosed in animals and human beings. On the whole, the strains were of average virulence, with one attenuated strain and one of enhanced virulence. There were four cases with histopathological anomalies. In a man, examination revealed numerous Negri bodies, but no encephalitis. In a child and in a cat, encephalitis was present without Negri bodies. Examination of the nervous system of a dog revealed only diffuse congestion of the capillaries.—M.G.G.

REAGAN, R. L., YANCY, F. S., SING CHEN CHANG & BRUECKNER, A. L. (1955). Transmission of street rabies virus strain (V308) to suckling hamsters during lactation.—*Proc. Soc. exp. Biol., N.Y.* 90, 301-302. 1611

Virulent rabies material was inoculated into 9 lactating hamsters and 8-22 days later a number of the offspring developed the disease. Of the dams 7 showed symptoms between the 14th and 22nd days.—T.E.G.R.

FEDYUSHINA, T. M. & SHAIN, D. A. (1955). [Preparation of aluminium hydroxide vaccine against sheep pox from virus stored for 1½-2 months.]—*Trud. nauchno-kontrol. Inst. vet. Preparatov.* 5, 266-269. [In Russian.] 1612

Aluminium hydroxide heat-inactivated sheep pox vaccine, prepared from infective lymph stored at 2° to 4° C. for 1½-2 months, would keep for 10 months, and possessed the same immunizing properties as vaccine prepared from fresh lymph.—F. A. ABBEY.

BESWICK, T. S. L. (1955). The titration of viruses in baby mice.—*J. Hyg., Camb.* 53, 339-356. 1613

This is a record of efforts to determine the LD₅₀ for mice, 24-48 hours old, of strains of herpes simplex virus by intraperitoneal inoculation. The results were analysed in an attempt to account for variation in the relationship between the dose of virus and observed mortality. Two main sources of difficulty in interpretation of such results are the high non-specific mortality of young mice and the tendency of the mothers to eat their young. Emphasis is laid on the care that must be given to interpretation of results of titrations in very young animals and on the fact that the litter rather than the individual baby mouse should be regarded as the unit.

—W. S. MARSHALL.

PARFENTJEV, I. A. (1955). Bacterial allergy increases susceptibility to influenza virus in mice.—*Proc. Soc. exp. Biol., N.Y.* 90, 373-375. [Author's summary slightly modified.] 1614

Experiments with mice indicate that hypersensitivity induced by *Haemophilus pertussis* antigen can increase susceptibility to influenza virus.

TAYLOR, L. W., LOWRY, D. C. & RAGGI, L. G. (1955). Effects of an outbreak of avian encephalomyelitis (epidemic tremor) in a breeding flock. — *Poult. Sci.* 34, 1306-1045. 1615

Avian encephalomyelitis appeared in chicks from an experimental breeding flock, without the adult stock having shown symptoms. As trap-nesting had been practised several pertinent factors were ascertained. Over 75% of the hens laid fewer eggs or paused completely for a few (av. 5-9) days. Eggs produced immediately before and during the period of depressed egg production showed decreased hatchability and increased embryonal

mortality during the last 3 days of incubation. The evidence indicated that the infected chicks originated from eggs laid preceding or during the decline in egg production. As egg production recovered, hatchability returned to normal and the disease no longer appeared in the chicks. Analysis of the data suggested that resistance to avian encephalomyelitis was more a matter of general fitness than of inherited specific resistance to the virus.

—L. M. MARKSON.

SCHAAF, K. & LAMOREUX, W. F. (1955). **Control of avian encephalomyelitis by vaccination.**—*Amer. J. vet. Res.* **16**, 627-633. 1616

The authors have investigated avian encephalomyelitis (AE) in chicks supplied by a large hatchery. The progeny of pullets alone were affected even when pullets and hens were kept together and their eggs incubated together. When affected chicks were reared and subsequently bred, the disease did not appear in their progeny. The authors postulate that AE is disseminated through the eggs of subclinically infected adults and that, if chickens are infected while still immature, they will become immune to the disease and will not transmit it to their progeny. A significant number of young pullets and cockerels, vaccinated in the wing web with dilute AE virus and subsequently challenged by intracerebral inoculation of the virus, were found to be resistant. As natural infection is far less drastic than intracerebral inoculation of virus, it seems reasonable to infer that vaccination by the method described offers a practical method of control. The authors also assert that, far from a farmer being advised to slaughter his stricken flock and begin again, he should be told that the progeny of those chicks which survive the outbreak will be immune to AE.—L. M. MARKSON.

SANDERS, M. & SORET, M. G. (1955). **Virucidal activity of WCS-90.**—*Antibiot. & Chemother.* **5**, 629-631. [Spanish summary pp. 664-665. Authors' conclusions modified.] 1617

The same approx. concentration of WCS-90 (a hypochlorous acid derivative) that has been used in urology for the treatment of tuberculous cystitis and as an antiseptic in surgery, when used in virus *in vitro* tests, inactivated the Lansing poliomyelitis virus so rapidly that it was not possible to demonstrate the rate of inactivation. This marked virucidal activity, even in the presence of animal protein, and the apparent complete lack of

toxicity should prove of importance from the standpoint of practical application. WCS-90 has been used successfully as a topical therapeutic agent in herpes simplex infections of the nose and throat.

FECHNER, J. (1955). Die Komplement-bindungsreaktion bei experimentell mit Bornavirus infizierten Pferden. [**Complement-fixation reaction in experimental Borna disease in horses.**]—*Mh. VetMed.* **10**, 553-556. 1618

Of 193 rabbits experimentally infected with Borna disease 130 yielded positive complement-fixation reactions. Details are given of results in three groups of horses. Complement-fixing antibodies were demonstrated in 7 of 10 horses infected intracerebrally and in one with natural Borna disease. Of a group of 5 which had been immunized by s/c inj. of rabbit brain material 3 yielded positive c.f. reactions. Of 7 horses which had been immunized and subsequently infected, 6 gave positive reactions. In the remaining horse, however, the disease was diagnosed P.M. The suitability in practice of the c.f. reaction for differential diagnosis and recognition of latent infection is discussed.—E.G.

ACHTZEHN, W. (1955). Ein Beitrag zum Problem der Heilung bornaerkrankter Pferde. [**Treatment of Borna disease in horses.**]—*Berl. Münch. tierärztl. Wschr.* **68**, 390-392. [English summary.] 1619

The author stated that claims of successful treatment of Borna disease should be regarded with certain reserve since, so far, the only reliable diagnosis appears to be P.M. Details were given of three horses which were killed 2½, 3½ and 7 months respectively after recovery, following treatment with a hexamethylene tetramine preparation in two cases and with penicillin in the third. In all three horses brain lesions P.M. were indicative of Borna disease. This was regarded as proof that the disease is curable.—E.G.

MATTHIAS, D. (1955). Strukturveränderungen der Erythrozyten bei der ansteckenden Blutarmut der Einhufer. [**Structural changes in erythrocytes during equine infectious anaemia.**]—*Dtsch. tierärztl. Wschr.* **62**, 7-9. 1620

Methyl violet staining of blood samples from horses with equine infectious anaemia revealed erythrocytes with inclusion bodies. They increased sharply in number a few days before death. Examination with Giemsa's stain

showed that they were not Jolly bodies. Similar findings were made in a horse which was dosed daily for a week *per os* with increasing quantities of sulphanilamide, but not in two horses inoculated with *Bact. coli.* vaccine. Blood samples from 27 healthy horses had a few thinly scattered inclusion bodies. M. discussed the significance of these findings, and concluded that E.I.A. is an inclusion body anaemia.—M.G.G.

DOLL, E. R., CROWE, M. E. W., BRYANS, J. T. & MCCOLLUM, W. H. (1955). **Infection immunity in equine virus abortion.**—*Cornell Vet.* **45**, 387-410. 1621

The authors found that most foals in Kentucky had an acquired immunity to equine abortion virus. Only 2 out of the 34 pregnant mares aborted following the i/v inoculation of virus 48-132 days after service; 16 of these were re-inoculated after 6 months, and only 2 aborted, compared with 6 abortions in 11 mares which had not received a previous inoculation of virus. The duration of immunity was very variable, lasting from less than a year in some mares to several years in others. Immunity resulting from the i/v inoculation of live virus afforded good protection from abortion for 12 months in most cases. The authors suggested that, under the endemic conditions prevailing in Kentucky, abortion would be controlled by annual inoculation with live virus of all mares just after the foaling period, in June or July.—R.M.

RANDALL, C. C. (1955). **Propagation of equine abortion virus in the chick embryo.**—*Proc. Soc. exp. Biol., N.Y.* **90**, 176-178. 1622

The adaptation of hamster-adapted equine abortion virus to the chick embryo is reported. Characteristic intra-nuclear inclusions were identified in the liver cells of chick embryos and of hamsters inoculated with serial passage chick embryo liver. The virus was identified by means of the complement-fixation reaction.—T.E.G.R.

ANON. (1955). **Skin lesions in rinderpest and their association with bovine cutaneous streptothricosis lesions.**—*Bull. epiz. Dis. Afr.* **3**, In English: pp. 281-282. In French: pp. 344-345. 1623

A letter suggesting that the skin lesions that may be seen in rinderpest infection are due to an intercurrent infection of streptothricosis, which may become acute when the host's resistance is lowered. [Skin lesions are not uncommon in Asiatic countries from which

streptothricosis has not been recorded. They are seen at a very early stage of the rinderpest infection and may resolve rapidly in animals which do not succumb to the rinderpest infection.]—W. E. PARISH.

STEVENIN, G., HUARD, P. & GOEFFON, Y. (1955). **Essais de vaccination du buffle asiatique contre la peste bovine par l'emploi du virus pestique lapinisé (virus L de J. Nakamura).** Première note. [Experimental vaccination of Asiatic buffaloes with lapinized rinderpest virus. Note I.]—*Bull. Soc. Pat. exot.* **48**, 405-414. 1624

Tests on 75 buffaloes showed that lapinized rinderpest virus can be lethal to young buffaloes. When given to animals in the incubation period of rinderpest, it seems to accelerate and aggravate the symptoms. With these exceptions, the virus may be used to protect Asiatic buffaloes; a dilution of virus of 1:400 seems to be the optimum titre for vaccination, and produces a solid immunity. Vaccination can usefully be accompanied by anti-trypanosomal chemotherapy.

—I. W. JENNINGS.

DUNCAN, D. W. (1955). **Suspected occurrence of bovine malignant catarrh in New South Wales.**—*Aust. vet. J.* **31**, 244-245. 1625

The clinical and P.M. findings on a heifer with an acute febrile disease are described. Generalized inflammation and croupous exudation of the upper respiratory tract were the most striking features. Despite failure of transmission tests, the lesions present were considered sufficient for a tentative diagnosis of bovine malignant catarrh. The disease has not hitherto been recorded in Australia.—R. D. BARRY.

BARWELL, C. F. (1955). **Laboratory infection of man with virus of enzootic abortion of ewes.**—*Lancet.* **269**, 1369-1371. [Author's summary modified.] 1626

A case of acute virus pneumonia in a laboratory worker is reported. The properties of the virus isolated from sputum, absorption tests on the patient's serum, and skin tests indicated that infection was due to the agent causing enzootic abortion in ewes. The virus had been used by the patient for experimental work during the three weeks preceding the illness. It has not previously been recorded as a cause of human disease.

SINCLAIR, K. B. (1955). **An outbreak of ovine contagious ophthalmia treated with chloram-**

phenicol.—*Brit. vet. J.* **111**, 507-511. [Author's summary modified.] **1627**

In an outbreak in a flock of 70 sheep, treatment with 0.5% aq. soln. of chloramphenicol twice daily for 14 days resulted in an apparent reduction in the number of cases developing keratitis. The drug did not rid the conjunctival epithelium of inclusion bodies. The possible sources of infection are discussed and the suggestion is made that hay imported on to the farm may have been involved.

JAKUCEWICZ, S. (1955). Spozrzenia dokonane w czasie masowej akcji zwalczania pomoru swin. [Control of swine fever.]—*Méd. vét., Varsovie*, **11**, 688-670. [In Polish.] **1628**

Observations during 3 months of about 400 outbreaks of swine fever were recorded. In a large number of outbreaks diagnosis during life was difficult as the pigs showed no specific symptoms, were quite lively and had a good appetite. In such cases the only reliable signs were affections of the eyes which were dull, rather sunken, often lachrymating profusely and photophobia was not uncommon. In subacute and chronic forms the eyelids were very often glued with muco-purulent discharge. In outbreaks where the usual clinical symptoms were manifest necrosis of the ears and tail was often noted, the later often becoming detached when handled during temperature recording.—M. GITTER.

ȘERBĂNESCU, C., DRĂGHICI, D. & SOLNITZKY, A. (1955). Leziunile histologice ale sistemului neurovegetativ simpatic în pesta porcină [Histological lesions of the autonomic nervous system in swine fever.]—*Anu. Inst. Pat. Igien. Anim., București*, **5**, 183-190. [In Roumanian. French and Russian summaries.] **1629**

Degenerative, infiltrative and proliferative changes were observed in the sympathetic ganglia of 32 pigs experimentally infected with swine fever. The posterior cervical ganglion, the thoracic ganglia, the coeliac (solar) plexus, the myenteric (Auerbach's) and submucous (Meissner's) plexi of the intestine, and the microganglia of the stomach were examined. Lesions of the coeliac plexus were more common and more severe than those of the thoracic and cervical ganglia.—R.M.

TRUSZCZYŃSKI, M., KUREK, C. & MIERZEJEWSKA, M. (1955). Obserwacje nad powikłaniami poszczepiennymi u swin po stosowaniu szczepionki przeciwpomrowej z fioletem krystalicznym (CV). [Post-vaccina-

tion reaction in pigs to crystal violet swine fever vaccine.]—*Méd. vét., Varsovie*, **11**, 713-718. [In Polish. English and Russian summaries.] **1630**

The importance of proper vaccination technique is discussed. In the authors' opinion young pigs up to 70 kg. should be vaccinated on the inside of the thigh, and older animals behind the ear. Care should be taken that the injection is done s/c. Only obviously healthy pigs and no sows in the last 2 months of pregnancy should be vaccinated. When these precautions are taken the incidence of complications is reduced. At least one month should elapse between crystal violet and swine erysipelas vaccinations.—M. GITTER.

FISCHER, K. & RÖHRER, H. (1955). Untersuchungen über den Wanderungsweg des Virus der Schweinelähmung. I. Lokalisation des Virus im Zentralnervensystem nach intranasaler Infektion. [Migration in the body of Teschen disease virus. I. Localization of the virus in the central nervous system after intranasal infection.]—*Arch. exp. VetMed.* **9**, 231-248. **1631**

A detailed account of the same experimental work described in condensed form in a paper previously published [*V.B.* **24**, 4057]. —E.G.

MADIN, S. H. & TRAUM, J. (1955). Vesicular exanthema of swine.—*Bact. Rev.* **19**, 6-19. **1632**

A review paper on the first recorded occurrence of the disease in the U.S.A. and its subsequent spread, with details of its aetiology, clinical characteristics, pathology, treatment and suggested methods of control.

—M. B. HAWKSLEY.

ANDERSSON, G. (1955). Neutraliserande antikroppar vid experimentell valpsjuka hos hund. [Neutralizing antibodies in experimental dog distemper.]—*Medlemsbl. Sver. VetFörb.* **7**, 113-114. **1633**

In neutralization tests in eggs inoculated with a 40% suspension of Lederle strain distemper virus, complete neutralization of the virus occurred in titres of 1:100, 1:200 and 1:600 with the blood serum of 3 survivors of a litter of 8 puppies that had been inoculated with virulent Swedish virus (S.v.) 1½ months earlier. The serum of the puppies had been free from neutralizing antibodies (n.a.) before inoculation and the dam had not been vaccinated; distemper had not occurred in the district of origin. In serum samples from

another litter of 5 puppies from this bitch, n.a. were demonstrable in low titres 6 days after infection with S.v., the titre rising steeply till the 12th day, and then gradually, reaching its maximum about 30–40 days after infection; it fell steeply till about the 60th day and remained fairly constant to the 75th day. On removal from isolation to the Veterinary College, Stockholm, 3 puppies were kept in the distemper unit and 2 in the general clinic for 75 days. Some increase in the n.a. titre occurred in the former group.—F.E.W.

BENDRICH, H. (1955). Über aktive Immunisierung gegen Hundestaupe mit Riemser Adsorbatvakzine. [**Active immunization against dog distemper with adsorbate vaccine.**]—*Mh. VetMed.* 10, 169–171. 1634

Twelve-week-old puppies were exposed, after vaccination, to contact or i/m injection with dog distemper. P.M. examination revealed no signs of the disease. Protection for over 2 years was observed in 202 out of 225 dogs vaccinated in Berlin. Of the 23 failures, 16 occurred before immunity could develop. No failures were reported in 120 dogs vaccinated in general practice. Two miniature dogs reacted to the vaccine with general symptoms. Half the dosage is recommended for them.—M.G.G.

KRABBE, A. & MÜLLER, J. (1956). Hepatitis contagiosa canis med særligt henblik på den serologiske diagnose. [**Canine virus hepatitis with special regard to the serological diagnosis.**]—*Nord. VetMed.* 8, 35–42. [In Danish. English and German summaries.] 1635

Serum samples from 196 dogs undergoing surgical or medical treatment or having symptoms the cause of which was not clear, were examined by the complement-fixation test for canine virus hepatitis. Of these 59 gave a positive and 118 a negative reaction and 19 could not be tested because of anti-complementary effects. Nineteen of the dogs were re-tested 1–4 weeks later and 4 a third time; only one (7 months old) which was previously negative gave a positive reaction in the second test after 4 weeks. Only 2 out of 32 dogs less than a year old were positive as compared with 35 out of 63 over a year old. None of the dogs had symptoms typical of canine virus hepatitis.—F.E.W.

HYSLOP, N. ST. G. (1955). Feline enteritis in the lynx, the cheetah and other wild Felidae. —*Brit. vet. J.* 111, 373–377. 1636

An account of an outbreak of feline

enteritis involving a young lynx and its two litter-mates and an 8-month-old cheetah. No wild Felidae had been on the premises for some 3 months, but some 5 months earlier a domestic cat had been affected clinically with the disease and had recovered, and a young lynx that had had direct contact with this cat had become infected after 21 days and had died. Fomites from this lynx were considered to have been the source of the later outbreak. Two kittens inoculated s/c with freeze-dried and wet spleen material, respectively, from the cheetah, developed typical feline enteritis and died in 4 and 8 days respectively. Attempts to infect rabbits, g. pigs and mice were unsuccessful.—F.E.W.

WHITTY, B. T. (1955). Myxomatosis in the common hare—*Lepus europaeus*.—I.—*Irish vet. J.* 9, 267–268. 1637

COLLINS, J. J. (1955). Myxomatosis in the common hare—*Lepus europaeus*.—II.—*Ibid.* 268–269. 1638

I. A dead hare, showing symptoms of myxomatosis, was submitted for examination. Infective material from the hare was injected s/c into a rabbit. Typical symptoms developed 8 days after injection, followed by death on the 10th day. A healthy rabbit placed in contact with the affected rabbit developed the disease after 10 days, and died on the 11th day.

II. The carcass of a hare was found in County Kildare in an area where myxomatosis was causing heavy mortality in rabbits. No macroscopic lesions of myxomatosis were present. A suspension of kidney tissue was injected s/c into 2 rabbits. Ten days later, both developed myxomatosis. Lesion suspension was prepared from the rabbits, and injected into 2 hares. These remained healthy, and apparently did not act as carriers, as rabbits injected with spleen and kidney suspensions prepared from these hares failed to develop myxomatosis.—M.G.G.

JACOTOT, H., VALLÉE, A. & VIRAT, B. (1955). Apparition en France d'un mutant naturellement atténué du virus de Sanarelli. [**Appearance in France of a naturally attenuated mutant of myxomatosis virus.**]—*Ann. Inst. Pasteur.* 89, 361–364. 1639

The authors have isolated a naturally occurring mutant of the myxomatosis virus, of reduced virulence, about two and a half years after the initial outbreak of myxomatosis in 1952. In experimental animals, the virus does

not kill until about 19 days after injection, and in 4 out of 5 cases the disease is of the nodular type.—I. W. JENNINGS.

RODRÍGUEZ LOUSTAU, J. A., QUEVEDO, J. M., JR., TORRE, E. J. & RIZZO, H. R. (1955). Mixomatosis. Estudio de un foco—tentativas de inmunización. [A study of an outbreak of myxomatosis in laboratory rabbits in Argentina.]—*Gac. vet., B. Aires*, **17**, 172-186. [English and French conclusions] 1640

The strain of virus isolated from the outbreak was less virulent than the European virus and did not produce generalized subcutaneous lesions. It was pathogenic only for domestic and wild rabbits (*Oryctolagus cuniculus*) and for chick embryos. Virulent blood, either defibrinated or fresh, was regularly infective when inoculated by a variety of routes, as was nasal or ocular exudate instilled into the eye. Transmission occurred after close contact (one healthy rabbit with 2 infected ones) but not after contact with contaminated cages. Attempts to prepare an effective vaccine yielded generally unsatisfactory results, but some of the 42 products prepared were considered to merit further study.—F.E.W.

MARSHALL, I. D., DYCE, A. L., POOLE, W. E. & FENNER, F. (1955). Studies in the epidemiology of infectious myxomatosis of rabbits. IV. Observations of disease behaviour in two localities near the northern limit of rabbit infestation in Australia, May 1952 to April 1953.—*J. Hyg., Camb.*, **53**, 12-25. 1641

Observations in two contrasting areas in Australia during a 12-month period indicated great reductions in their rabbit populations. Myxomatosis was found to be present and to cause minor unobserved epizootics. Despite the frequent re-introduction of fully virulent virus, all strains recovered from rabbits were slightly attenuated.—M. B. HAWKSLEY.

JACOTOT, H., VALLÉE, A. & VIRAT, B. (1955). Sur la conservation et la destruction dans les peaux du virus de la myxomatose des lapins. [Conservation and destruction of the virus of myxomatosis in rabbit skins.]—*Ann. Inst. Pasteur*, **89**, 290-298. 1642

Myxomatosis virus may survive up to 10 months in dried rabbit skins. Virus persists longer in skin from rabbits allowed to die naturally than in those slaughtered at the height of the disease. The virus is destroyed by exposing the skins, after a few days' drying,

to a temp. of 70°C. for 1½ hours, in a moist atmosphere. A normal industrial process consists of brushing the fur with a solution of metallic salt in strong acid and water, followed by drying in an oven at 70°C. for 5 hours. Tests on two infected rabbit skins showed that this treatment destroyed the virus.

—I. W. JENNINGS.

JACOTOT, H., VALLÉE, A. & VIRAT, B. (1955). Considérations sur la durée et le mécanisme de l'immunité engendrée par le virus du fibrome de Shope contre le virus du myxome de Sanarelli. [Duration and mechanism of immunity to rabbit myxomatosis using Shope's fibroma virus.]—*Ann. Inst. Pasteur*, **88**, 381-384. 1643

Tests on rabbits over a period of 2 years gave the following results. The immunity conferred by Shope's fibroma virus lasts for at least 9 months. There is no connexion between the size of the fibroma and the degree of immunity conferred. Immunity is conferred even if a fibroma does not develop.—M.G.G.

SCHOOP, G., SIEGERT, R., GALASSI, D. & KLÖPPEL, G. (1955). Newcastle-Infektionen beim Steinkauz (*Athene noctua*), Hornraben (*Bucorvus* sp.), Seeadler (*Haliaeetus albicilla*) und Rieseneisvogel (*Dacelo gigas*). [Newcastle disease in the little owl, raven, white-tailed eagle and giant kingfisher in a zoological garden.]—*Mh. Tierheilk.*, **7**, 223-235. 1644

After summarizing the literature on the incidence of N.D., the authors described an outbreak which affected ravens, giant kingfishers, owls, a hornbill and a secretary bird. Symptoms were loss of appetite, inability to fly or run, staggering, and neuritis. P.M. lesions were enteritis and degeneration of the parenchyma of the heart, liver and kidneys. Two strains of the virus were isolated and their identity established by haemagglutination tests, cross immunity tests on fowls, characteristic symptoms in experimentally infected fowls, pigeons and mice, pyrogen tests on rabbits, thermo-stability tests of the agglutinins, and by testing the agglutination spectrum with serological antigens.—M.G.G.

ATANASIU, P., EDIPIDES, T. & BASSET, J. (1955). Données nouvelles sur l'hémolysine du virus de Newcastle. Action des hautes pressions. [Haemolysin of Newcastle disease virus. Action of high pressure on its release.]—*Ann. Inst. Pasteur*, **89**, 523-530. 1645

Experimental work is reported which

suggests that high pressure (2,000–4,000 kg. per sq. cm.) releases the haemolysin from N.D. virus.—D. LUKE.

SEIFFERT, G. (1955). Züchtung von Geflügelpest und anderen Viren nach einer neuen Methode. [*Cultivation of Newcastle disease and other viruses.*]—*Berl. Münch. tierärztl. Wschr.* **68**, 388–390. [English summary.] **1646**

An account of a method for the cultivation of virus and its demonstration in tissue culture cell suspensions. Ground tissue from chick embryos 8 days old was washed in isotonic saline containing penicillin and streptomycin. R.b.c. and larger bits of tissue were centrifuged off, leaving a suspension of single cells or small cell aggregates. Slanting test tubes containing 0.1 ml. of the suspension, 0.1 ml. of virus suspension and 0.8 ml. of a nutrient soln. consisting of 10% embryonic extract, 50% inactivated horse serum and 40% Hank's soln. were then incubated at 35°C. After about 3 days, disintegration of cells could be seen under the microscope. In control tubes containing tissue culture without virus, development of fibroblasts was demonstrated microscopically after about 12 hours. In tubes in which virus was neutralized with specific antisera fibroblasts developed freely. This method was found suitable for cultivation and serological diagnosis of the viruses of fowl plague and Newcastle disease as well as vaccinia, fowl pox and influenza. Its possibilities for qualitative and quantitative demonstration of virus and for the cultivation of virus with a view to vaccine production were discussed.—E.G.

MASON, E. J. & KAUFMAN, N. (1955). Newcastle disease virus in cultures of chick embryo tissues. Its multiplication, titration and cytopathogenicity.—*Amer. J. Path.* **31**, 883–899. **1647**

The authors describe the titration of N.D.V. in cultures of various chick embryo tissues, and the changes produced by the virus. The strain used destroyed cells from brain, lung, liver, intestine, heart and skeletal muscle of embryos from 7–19 days old, but in practice it was most convenient to use heart tissue from embryos 14–19 days old. For maximum titre it was advisable to allow tissue cultures several days for outgrowth, rather than to inoculate immediately after preparation. Immune serum inhibited destruction of tissue by the virus and, depending on the dose, was

able to protect cells even up to 24 hours after virus inoculation. Multiplication was greatest between 7 and 48 hours after inoculation. Thereafter, the growth curve flattened out and began to fall after 5 days.—I. W. JENNINGS.

FLANAGAN, A. D., LOVE, R. & TESAR, W. (1955). Propagation of Newcastle disease virus in Ehrlich ascites cells *in vitro* and *in vivo*.—*Proc. Soc. exp. Biol. N.Y.* **90**, 82–86. [Authors' summary modified.] **1648**

An account of the propagation of N.D.V. in Ehrlich ascites tumour cells maintained *in vitro*. After prolonged serial passages *in vitro*, multiplication of the virus occurred in the tumour *in vivo*, and in the later passages this was accompanied by cytological and biological evidence of oncolysis.

BONADUCE, A. (1954). Ricerche sull'influenza degli antibiotici sulla produzione di anticorpi inibenti l'emoagglutinazione da infraviruses pseudo-pestoso aviare. [*Antibiotics and the production of haemagglutination-inhibiting antibodies of Newcastle disease virus.*]—*Ann. Fac. Med. vet. Torino.* **4**, 415–417. **1649**

Antibiotics (chlortetracycline, dihydrostreptomycin and chloramphenicol) administered over a period of 20 days did not affect the general health or the production of haemagglutination-inhibiting antibodies in rabbits.—T.E.G.R.

CONSOLI, G., SCETTINI, F. & PIOMELLI, S. (1955). Reazione erytremoide in *Gallus domesticus* da vaccinazione anti-newcastle. [*Erythraemic reaction of fowls following vaccination against Newcastle disease.*]—*Boll. Soc. ital. Biol. sper.* **31**, 146–148. **1650**

The blood of 347 fowls was examined 4, 8 and 20 days after vaccination against N.D. [nature of vaccine not stated]. In 88 of the birds there was erythroblastosis and moderate leucocytosis between the 4th and 8th days after vaccination. The authors concluded that the erythroblastic tissue of fowls was particularly labile, and this may act as a predisposing factor to diseases of the avian leucosis complex.—R.M.

CORDIER-BOULLANGIER, G., OUNAS, A. & HAROUNI, B. (1955). Vaccination contre la maladie de Newcastle par voie oculaire. [*Vaccination against Newcastle disease by the conjunctival route.*]—*Rec. Méd. vét.* **131**, 765–771. **1651**

The Beaudette strain of virus was used in

doses of 0.05 ml. No undesirable effects were observed. An effective immunity was established up to at least 9 months.—D. LUKE.

EVANS, A. S. (1955). Pathogenicity and immunology of Newcastle disease virus (NDV) in man.—*Amer. J. publ. Hlth.* **45**, 742-745. 1652

E. studied the literature on Newcastle disease in man and stated that the only certain manifestation of human infection is acute conjunctivitis. The relationship between the virus and human haemolytic anaemia is stated to be uncertain. Respiratory involvement is generally slight or absent. The virus was isolated from ocular, nasal and salivary excretions and on rare occasions from blood and urine. Incidence in poultry farmers handling infected flocks is very much lower than in research workers. Details are given of neutralization tests in 26 serum samples from laboratory personnel exposed to the virus. Highest titres and incidence of conjunctivitis were in persons who inhaled virus during aerosol experiments and in those packing lyophilized vaccine into ampoules.—E.G.

VOLKERT, M. & CHRISTENSEN, P. M. (1955). Two ornithosis complement-fixing antigens from infected yolk sacs. I. The phosphatide antigen, the virus antigen and methods for their preparation.—*Acta path. microbiol. scand.* **37**, 211-218. [In English. Abst. from authors' summary.] 1653

CHRISTENSEN, P. M. & VOLKERT, M. (1955). Two ornithosis complement-fixing antigens from infected yolk sacs. II. The nature of the virus antigen and its relation to the phosphatide antigen.—*Ibid.* 219-224. [In English. Authors' summary modified.] 1654

I. The phosphatide antigen was extracted from boiled tissue with ether, and the resulting suspension precipitated in acetone. It was considered to be a phosphatide. It was very stable; storage at 4°C. for 20 weeks caused no decrease in titre. The virus antigen was not soluble in ether, and was obtained from unheated tissue, which had been treated with phenol and ether. The antigens were of high potency and were not found to contain inhibitory or anti-complementary substances.

II. The psittacosis tissue antigen in raw infected yolk sacs appeared to consist of the virus particles in combination with the phosphatide antigen. The combination seemed unstable, and treatment by different methods released a free phosphatide antigen. Simi-

larities are pointed out between the psittacosis complement-fixing antigens and the rickettsial antigens.

KAPLAN, M. M. & BERTAGNA, P. (1955). The geographical distribution of Q fever.—*Bull. World Hlth Org.* **13**, 829-860. [In English. French summary. Abst. from authors' summary.] 1655

A survey in 32 countries, and an analysis of published reports indicated that Q fever exists in 51 countries in the 5 continents. The disease was found to exist in most countries where investigations were carried out. Notable exceptions were Ireland, the Netherlands, New Zealand, and the Scandinavian countries. All these countries import relatively few domestic ruminants.

STOKER, M. G. P. & MARMION, B. P. (1955). The spread of Q fever from animals to man. The natural history of a rickettsial disease.—*Bull. World Hlth Org.* **13**, 781-806. [In English. French summary. Authors' summary modified.] 1656

The organism has been isolated from ticks, domestic and wild animals, and birds. The maintenance of the infection in nature is discussed. The epidemiology of Q fever in man, and the means of transmission from domestic animals are described.

KAECKENBEECK, A. (1955). Fièvre Q. Enquête sérologique sur son existence en Belgique. [Q fever. Serological investigation into its presence in Belgium.]—*Ann. Méd. vét.* **99**, 555-574. [English and German summaries. Abst. from English summary.] 1657

Negative results of a serological survey of 610 cattle and the absence of Q fever among the human population led to the view that the disease is practically non-existent in Belgium.

STOKER, M. G. P., PAGE, Z. & MARMION, B. P. (1955). Problems in the diagnosis of Q fever by complement-fixation tests.—*Bull. World Hlth Org.* **13**, 807-827. [In English. French summary.] 1658

In routine testing of sera for detection of Q fever antibodies by c.f. tests, a rigid system of antigen units is unsatisfactory. The optimum antigen dilution should be judged after full "chess-board" titrations with a variety of antisera. Non-specific reactions may be detected with a rickettsial typhus or similar control antigen. Irrespective of the antigen concentration, antigen from the Nine Mile strain of *Rickettsia burneti* was more sensitive

for detecting Q fever antibodies in human and g. pig sera and in sera from Welsh sheep, antigen from the Henzerling strain being markedly more sensitive in sera from Kentish sheep. The choice of antigen must depend on the geographical area and the species to be tested.—A. ACKROYD.

GIROUD, P. (1955). Le chapitre des Rickettsioses; où commence-t-il, où finit-il? [Varieties of *Rickettsia* infection.] — *Rec. Méd. vét.* 131, 867-886. 1659

G. discussed the relationship of the known rickettsial infections to a disease of man and animals, characterized by the presence of rickettsia-like elements in histological sections and psittacosis antibodies in the blood, details of which have been published previously [see *V.B.* 25, 2360; 26, 132, 133, 1287 & 1290; and the next two absts.]. He suggested that this agent, the existence of which was based mainly on serological evidence, occupied a position between the rickettsia and psittacosis virus, and proposed the name *Neorickettsia mundi*, the specific name being chosen because what appeared to be the same agent occurred in Europe and in Africa.—R.M.

See also absts. 1825 (use of spiral loops in virological micro-methods); 1830 (report, Great Britain); 1832 (report, Western Australia); 1833 (report, Kenya); 1834 (report, Nigeria); 1835 (report, Uganda); 1836 (report, Malaya); 1837 (report, Northern Borneo).

IMMUNITY

NELSON, R. A., JR. (1956). The immune-adherence phenomenon. A hypothetical role of erythrocytes in defence against bacteria and viruses. — *Proc. R. Soc. Med.* 49, 55-58. 1662

Immune adherence is an *in vitro* reaction between erythrocytes and a wide variety of micro-organisms sensitized with their specific antibody, and leads to enhancement of phagocytosis of bacteria by leucocytes. N. suggested that *in vivo* the erythrocyte may be regarded as an opsonic agent for bacteria and viruses in the immune host, and for some viruses in the non-immune by the well-known adsorption of viruses on the erythrocyte surface. He cited experimental evidence in support of this extension of erythrocyte function which, however, can be visualized only in monkey, baboon, and man; the erythrocytes of other species appear to be unreactive.

—A. B. PATERSON.

RAPP, F., GNESH, G. M. & GORDON, I (1955). A practical method for removal of anticom-

I. PRAT, J. (1955). Contribution à l'étude de l'étiologie de la broncho-pneumonie contagieuse des bovidés. [Aetiology of bovine contagious broncho-pneumonia.] — *Rev. Méd. vét.* 106, 668-679. 1660

II. PRAT, J. (1955). Un élément à la limite du groupe des rickettsies isolé lors d'une enzootie de broncho-pneumonie contagieuse des bovidés est-il transmissible et pathogène pour l'homme? [An agent isolated from contagious broncho-pneumonia of cattle ("neorickettsia"). Pathogenicity for human beings.] — *Ibid.* 732-734. 1661

I. P. described a broncho-pneumonia affecting 6 cows in one herd and one in another. Serum from 5 of them contained antibodies against the antigens of 2 strains of a virus of the psittacosis group isolated from human beings. He suggested that this agent (named "neorickettsia" by Giroud) was a primary cause of broncho-pneumonia in cattle, rather than *Pasteurella*.

II. The farmer who owned one of the herds referred to above, developed broncho-pneumonia at the same time as the cattle were ill. His serum, and that of his wife, was positive to the same antigens as the cattle.

—R.M.

plementary properties from human serum. — *Proc. Soc. exp. Biol., N.Y.* 90, 335-339. [Authors' summary modified.] 1663

A simple method is described for the removal of anti-complementary properties from sera, by treatment with acetone-extracted, dried, normal mouse liver powder. This material removes non-specific properties, does not markedly reduce or increase antibody titres with sera which gave specific reactions with virus and rickettsial antigens, and does not introduce non-specific properties in non-reacting specimens.

WINTER, L. B. (1955). Sensitization of the guinea-pig by horse serum. — *J. Physiol.* 129, 564-567. 1664

Intraperitoneal inoculation of horse serum is shown to be superior to intravenous inoculation in producing the sensitivity necessary for generalized anaphylactic shock in the g. pig. A discrepancy was found in about 20-30% of experiments between sensitivity tests on an isolated uterine horn and those

carried out later by administration of a reacting dose to the entire animal. A higher proportion of g. pigs sensitized *via* the mesenteric vein developed shock and insensitivity of the uterus than in the intraperitoneally inoculated group, and it is therefore unlikely that foreign protein introduced into the peritoneal cavity passes directly to the liver.—A. B. PATERSON.

KAY, S. & THORNTON, J. L. (1955). **Observa-**

See also absts. 1484 (streptococcal mastitis); 1487-1492 (anthrax); 1496-1505 (TB.); 1516 (*E. rhusiopathiae*); 1578 haemorrhagic septicaemia in cattle; 1522 (*Bact. coli* infection); 1530-1546 (brucellosis); 1548 (avian spirochaetosis); 1551 and 1556 (leptospirosis); 1558-1559 (*Cl. welchii* infection); 1578 (contagious agalactia of sheep and goats); 1600-1605 (F. & M. disease); 1609 (Anjeszky's disease); 1610-1611 (rabies); 1612 (sheep pox); 1614 (bacterial allergy and susceptibility to influenza in mice); 1616 (avian encephalomyelitis); 1618 (Borna disease); 1621 (equine virus abortion); 1624 (rinderpest); 1630 (swine fever); 1633-1634 (dog distemper); 1635 (canine virus hepatitis); 1643 (myxomatosis); 1644-1652 (Newcastle disease); 1653-1654 (psittacosis); 1655 (Q fever); 1674 (serological methods in meat inspection).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

SMITH, C. L. & RICHARDS, R. (1955). **Evaluations of some new insecticides against lice on livestock and poultry.**—*J. econ. Ent.* 48, 566-568. 1666

Tests were conducted using chlorinated hydrocarbons and phosphorus insecticides in controlling lice on livestock and poultry. Most of the compounds were effective against several species of lice. In general, the phosphorus compounds lacked the residual effectiveness of the chlorinated hydrocarbons, but they were effective at lower concentrations.

—D. POYNTER.

I. RAUN, E. S. (1955). **Use of synergized pyrethrins to prevent oviposition by cattle grubs.**—*J. econ. Ent.* 48, 603-604. 1667

II. RAUN, E. S. (1955). **Weight gains in feeder calves treated with low pressure rotenone sprays to control cattle grubs.**—*Ibid.* 604. 1668

I. A pyrethrin preparation containing 10% piperonyl butoxide and 1% pyrethrins, was applied to calves by means of an automatic treadle micro-sprayer [*V.B.* 26, 870], installed in the entrance to the watering area. It controlled oviposition by *Hypoderma lineatum*, but not by *H. bovis*.

II. A spray containing 5% rotenone was applied to calves once monthly for 3 months each winter, in 1951 and 1952. The average reduction in warble counts was 76.8% in 1951 and 89% in 1952. Treated animals gained an av. of 4.7 lb. in 1951 and 11.6 lb. in 1952 over untreated animals. The differences were not statistically significant.—M.G.G.

tions on the intraperitoneal injection of aluminum hydroxide in mice.—*Arch. Path.* 60, 651-654. [Authors' summary modified.] 1665

Aluminium hydroxide, when injected i/p into mice, produces a histiocytic and fibrous granuloma with adhesions between the viscera and pelvic organs, but obstructive phenomena do not result. No deleterious effects upon the animals were noted during a 4-month observation period.

WEITZ, B. & JACKSON, C. H. N. (1955). **The host-animals of *Glossina morsitans* at Dagá-Iloi.**—*Bull. ent. Res.* 46, 531-538. 1669

Identification of the host blood ingested by the flies was made by the precipitin test, using antisera prepared in rabbits, sheep, goats and calves, and by a new test, the inhibition test, involving the agglutination of tanned r.b.c. Whilst the precipitin test, using absorbed rabbit antisera, could differentiate between samples derived from the main host groups, i.e. Equidae, Suidae etc., the inhibition test determined individual species in each group. The predominating hosts were the wart-hog and the bush-pig although these formed only 10% of the ungulates present.

—M. L. CLARKE.

LOVEMORE, D. F. (1955). **A preliminary report on the results of blood meals from tsetse collected at Kariangwe—Lubu river valley, June 1951 to May 1952.**—*Bur. interafr. Tsé-Tsé*, B.P.I.T.T. Publ. No. 208/0, pp. 3. 1670

Examination, by the precipitin test, of blood ingested by 200 engorged *Glossina morsitans* revealed that the wart-hog and bush-pig were frequently fed upon, as also were the elephant and rhinoceros. The buffalo, contrary to general opinion, was not the most important host of the tsetse. Although baboons were numerous in the area, only one of the samples could have come from them.

—JAS. G. O'SULLIVAN.

BURSELL, E. (1955). **Experiments in tsetse control in southern Tanganyika.**—*Bull. ent. Res.* 46, 589-597. 1671

Surveys revealed a high density of tsetse flies in the open glades, formerly village sites, of wellgrown *Brachystegia* woodland forming a single, continuous canopy. In a test area, destruction of the double-canopied interzones between glades and woodland reduced the tsetse population considerably. It is considered that discriminative clearing could eradicate the tsetse fly in this area.—M.G.G.

I. TSITSIN, N. V. & CHERKASSKI, E. S. (1955). [Activated creolin, in the treatment of mange in sheep.]—*Veterinariya, Moscow*. 32, No. 7, pp. 41-43. [In Russian.] 1672

II. TROITSKI, I. A. & KHATIN, M. G. (1955). [Complete eradication of mange in sheep.]—*Ibid.* pp. 37-40. [In Russian.] 1673

I. Activated creolin is the name used by the authors for creolin containing 10-35% benzene hexachloride (B.H.C.). This combines the instantaneous but non-lasting effect of creolin with the slow long-lasting effect of B.H.C. It is prepared by adding B.H.C. and an emulsifying agent to creolin at 55° to 65°C., and mixing until a homogeneous mass is obtained. The consistency depends on the proportion of the components. Dipping sheep for 30-40 sec. into a bath containing 0.15-0.25% B.H.C. in creolin is curative and prevents re-infection for about 6 months. The temp. of the bath need not be more than 18° to 22°C. The new preparation "ichthyoline" is, basically, activated creolin in which part of the emulsifying agent has been replaced by sodium ichthyolate.

II. The basic treatment of mange consists in dipping the animals in creolin with B.H.C. Temperature and concentration of the dip have to be carefully controlled and complete solution of the B.H.C. without overheating must be ensured. Scabs and scales must be removed to ensure contact of the solution with the diseased skin. During the cold season the use of B.H.C. as powder is advocated.

—A. MAYR-HARTING.

See also absts. 1582 (report, East Africa); 1583 (trypanosomiasis); 1593 (viability of *Babesia caballi* in *Hyalomma plumbeum*); 1774 (sawfly poisoning in cattle).

HARDING, W. C., JR. (1955). Malathion to control the northern fowl mite.—*J. econ. Ent.* 48, 605-606. 1674

Bdellonyssus sylvarum infestation of hens was controlled in dry-litter pens in 1-4 days by the application of 1 lb. or $\frac{1}{2}$ lb. of 4% malathion dust to 20 sq. ft., with a little mixed into each nest. Cocks had to be dusted individually. Control was not achieved in damp-litter pens treated at the rate of $\frac{1}{4}$ lb./20 sq. ft. [but see also V.B. 25, 2859].

—M.G.G.

WILKINSON, P. R. (1955). Temporary destocking of pastures to aid control of the cattle tick.—*Nature, Lond.* 176, 515. 1675

The cattle were kept off the pasture for 3-4 months, which is estimated as the time from when the engorged female ticks, (*Boophilus microplus*), oviposit until the death of their larval progeny. W. suggested that a system involving the rotational destocking of pastures would be a valuable adjunct to insecticidal treatment in the control of the tick in Australia.—D. W. JOLLY.

HOLZ, J. (1955). Untersuchungen über die Möglichkeit der Übertragung von Milben (*Psoroptes* und *Notoedres*) und Läusen (*Polyplax spinulosa*) durch *Musca domestica*. [Transmission of *Psoroptes* and *Notoedres* mites and the louse *Polyplax spinulosa* by *Musca domestica*.]—*Tierärztl. Umsch.* 10, 248-249. 1676

A description of laboratory experiments in which the house fly, *M. domestica*, was used to transmit *Ps. communis cuniculi* from infested to clean rabbits; the louse, *P. spinulosa*, from infested white rats to clean rats and the mite, *N. alepis*, from heavily infested dead white rats to clean susceptible rats.—W. E. PARISH.

PARASITES IN RELATION TO DISEASE [HELMINTHS]

STANDEN, O. D. (1955). The progress of degenerative changes in schistosomes following the treatment of experimental infections with 1:7-bis (*p*-dimethylaminophenoxy) heptane.—*Trans. R. Soc. trop. Med. Hyg.* 49, 416-423. 1677

Using *S. mansoni* in mice, and *S. japonicum* in a g. pig, S. discovered that

following treatment with 1:7-bis(*p*-dimethylaminophenoxy)heptane the greater part of the hepatic shift was achieved in 3 days. Depigmentation of the worms was a result of drug action but was not proportionate to degree of drug activity. Female worms disintegrated more rapidly than males. Worms in copula tended to separate after treatment.

The drug had no effect on the viability of ova present in intestinal or hepatic tissues of the host at the time of treatment but it had a marked effect upon the egg laying of the schistosomes. Affected schistosomes were rendered immobile and stimulated foreign-body reactions in the liver or the mesenteric veins. Worms thus ensheathed in inflammatory tissue were invaded by phagocytes and destroyed.—D. POYNTER.

I. BIONDO, G. & BENINATI, F. (1954). Osservazioni sulle proteine del siero di sangue di bovini sani e colpiti da echinococchi polmonare. [Serum-protein content of cattle in health and in *Echinococcus* infestation of the lungs.—*Ann. Fac. Med. vet. Torino*, 4, 209-212. 1678

II. FALASCHINI, A. & MANTOVANI, G. (1954). Osservazioni sul comportamento delle proteine del siero di sangue in bovini da macello colpiti da lesioni parassitarie a sede epatica. [The serum proteins of slaughter cattle with parasitic lesions in the liver.—*Ibid.* 213-217. 1679

I. Total protein values increased with age in all of 60 animals (including 12 with echinococcus infestation of the lungs). The albumin content was higher in animals under 2 years than in those over 5 years old; between those ages it varied according to the method of analysis employed (chemical or electrophoretic). The average in both healthy and echinococcus-infested animals, was above 50% of the total proteins (by chemical analysis) and above 34.5% (by electrophoresis). The albumin/globulin ratio tended to decrease with age. Formol-gel reactions were negative in 29 and positive in 14 cases.

II. There was only a slight increase in the total serum-protein content in light parasitic affections of the liver. In heavy echinococcus infestation of the lungs and liver there was a marked decrease in the albumin fraction. Marked changes, due to an increase in the γ -globulins, were observed in mixed echinococcus and fasciola infestation of the liver.—T.E.G.R.

DEIANA, S. (1955). Attività ialuronidasi dello *Strongylus* (*Strongylus*) *equinus* e dello *Strongylus* (*Alfortia*) *edentatus*. [Hyaluronidase in extracts of *Strongylus equinus* and *S. edentatus*.—*Arch. Vet. Ital.* 6, 225-229. [English, French, Spanish and German Summaries.] 1680

Extracts of *S. equinus* and *S. edentatus*

reduced synovial viscosity practically to the same extent as extract of bull's testicle. It is considered probable that the bodies of these parasites contain a hyaluronidase-like substance which facilitates their migration in the tissues of their host.—T.E.G.R.

GIBSON, T. E. (1955). Controlled tests of tetrachlorethylene as an anthelmintic against *Trichostrongylus axei* in sheep.—*Vet. Rec.* 67, 1129-1130. [Author's summary modified.] 1681

Seven experimental lambs were each infected with 63,000 *T. axei* larvae. Two lambs were dosed with 2.5 ml. of tetrachlorethylene in gelatin capsules, two with 5 ml., and two acted as controls. The seventh was given 30 g. of phenothiazine for comparison. The results were assessed on the basis of worm counts carried out one week after treatment. They showed tetrachlorethylene to be completely ineffective against *T. axei*, but confirmed the efficacy of phenothiazine. Comparison of the faecal egg counts before and after treatment showed how misleading these can be in assessing the efficacy of an anthelmintic. The subsequent drop in egg counts in the lambs treated with tetrachlorethylene was undoubtedly due to inhibition of the egg production of the worms and not to their elimination.

GIOTTO, V. (1955). Dati sulla diffusione della singamosi nel Veneto e risultati della sua terapia con antimoniltartrato di bario e potassio. [Spread of *Syngamus* infestation in the Venice region and its treatment with barium potassium antimonyltartrate.—*Vet. ital.* 6, 992-1002. [English, French and German summaries.] 1682

During 1954 *Syngamus* infestation was diagnosed 548 times in chickens in the Venice region. It was most prevalent during May, June and July. G. estimated that two thirds of the fowls in the region were infested. Birds showing symptoms were treated by placing them in a box in which they inhaled a finely-powdered mixture of barium antimonyltartrate and potassium antimonyltartrate. In 85% of birds treated on 50 farms the worms were expelled and the birds recovered.—R.M.

STEFANŃSKI, W. (1955). Badania nad terapią robaczyicy płucnej owiec. Technika iniekcji dotchawicowych. [Treatment of lungworm infestation in sheep by intratracheal application of drugs.] — *Méd. vét., Varsovie*, 11,

705-708. [In Polish. French and Russian summaries.] 1683

Intratracheal injection of sheep with 15 ml. of a 1% solution of gentian violet, revealed that in those injected while standing there was uneven distribution of the drug between the right and left lungs; in those injected while held lying on the back, and with the fore part of the body raised at an angle of 30°, there was almost complete and uniform penetration of the drug in the lung. The latter method (using Lugol's soln.) was therefore recommended, with similar treatment of the second lung a few days later.

—M. GITTER.

EGERTON, J. R. & HANSEN, M. F. (1955). Immunity and tolerance of chickens to the roundworm, *Ascaridia galli* (Schränk).—*Exp. Parasit.* 4, 335-350. 1684

The authors stated that immunity to *A. galli* in chickens is manifested as an ability to allow an increased number of worms to become established without adverse effect upon the host. No significant difference was observed between the lengths of worms recovered from immunized and non-immunized chickens. There appeared to be an age immunity against *A. galli*. It was suggested that these findings might lead to some modification of the current theory of immunity.—E. A. GIBSON.

NEMESÉRI, L. (1955). Vizsgálatok mikrofiláriáknak lovak szemében való gyakoriságáról és ezeknek kórtani jelentőségéről. [Incidence and pathology of microfilariae in the eyes of horses.].—*Mag. állator. Lapja*, 10, 421-424. [In Hungarian. English and Russian summaries.] 1685

Of 216 horses examined, 170 harboured adult *Onchocerca cervicalis* in the ligamentum nuchae and microfilariae in the skin. In 125 cases microfilariae were also present in the eyes. *O. cervicalis* was present in the ligamentum nuchae in 40 out of 48 horses with periodic ophthalmia, and microfilariae were demonstrated in the eyes of 28. *O. cervicalis* was present in the ligamentum nuchae of 130 of 168 apparently healthy horses. In 97 microfilariae were demonstrated in the eyes. N. stated that small numbers of microfilariae apparently do not cause periodic ophthalmia.—E.G.

VIANELLO, G. & VICENZONI, V. (1955). L'azione antielmintica dell'adipato di piper-

azina sugli ascaridi, gli strongili e gli ossiuri del cavallo. [Effect of piperazine adipate on ascarids, strongyles and oxyurids in horses.].—*Clin. vet., Milano*, 78, 263-266. [English summary.] 1686

A single dose of 300 mg. piperazine adipate per kg. body wt., given by mouth to a horse and a mule, led to the expulsion of ascarids and oxyurids and negative worm-egg counts. The number of strongyle eggs in the faeces was reduced by half. [See also *V.B.* 25, 1702.].—R.M.

PARNELL, I. W., DUNN, A. M. & REEVE, E. C. R. (1955). Some observations on anthelmintic dosing of hill hogs in southern Scotland.—*Brit. vet. J.* 111, 519-534. [Authors' summary modified.] 1687

Anthelmintic dosing trials were carried out on hill sheep on two systems: (a) All the sheep in a flock were dosed and those of a neighbouring flock used as controls; (b) Half or two-thirds of the sheep in a flock were dosed and the rest used as controls. No significant difference was found between the effects of dosing 3 and 4 times, or between the effects of dosing with various anthelmintics; but the standard errors of the individual trial estimates were high, and appreciable differences in the merits of the different dosing programmes cannot be ruled out.

MANN, P. H., HARFENIST, M. & DE BEER, E. J. (1955). The effectiveness of piperazine citrate against intestinal helminths of the cat and dog.—*J. Parasit.* 41, 575-578. [Authors' summary slightly modified.] 1688

Piperazine citrate was administered orally to dogs and cats at the rate of 100 mg./kg. daily for 10 consecutive days. This treatment was extremely effective against ascarids, somewhat effective against *Taenia taeniaeformis* and *Ancylostoma caninum*, but ineffective against *Dipylidium caninum* and *Trichuris vulpis*.

DERBAL, Z. (1955). Déparasitage des volailles et vermifuges enzymatiques. [Enzymes as anthelmintics for fowls.].—*Rev. Elev.* 8, 317-321. 1689

"Vermizym", an anthelmintic with a base of papain, rid fowls and guinea-fowls of intestinal worms, and had no effect on growth and egg production.—M.G.G.

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS
[INCLUDING FOWL PARALYSIS]

NILSSON, T. (1955). **Heart-base tumours in the dog.**—*Acta path. microbiol. scand.* **37**, 385-397. [In English.] **1690**

Forty cases of heart-base tumours were found in dogs examined P.M. at the Royal Veterinary College, Stockholm, between 1928 and 1953. The tumours were single in 30 dogs, two were present in 6 and three in 4. In 20, the tumours were located between the aorta and pulmonary artery, in 7 they were on the left side between the left auricle and the pulmonary artery and in 4 between the right auricle and the aorta. Histologically, the tumours were of two types. The histology of the first type is described in detail. There were 33 in this group, 25 being found in Boxers. They appeared to arise from the aortic bodies and to be of neuro-epithelial type. One attempt to transmit a heart-base tumour of this type to the subcutis and preputial mucosa of a healthy dog was unsuccessful: it is further noted that, while heart-base tumours are not uncommon in Sweden, transmissible venereal tumours appear to be unknown there. The 7 tumours of the second type (4 of which were in Boxers) were presumed to arise from aberrant thyroid tissue: in contrast with the neuro-epithelial type, tumours of this second type occasionally showed invasive growth.

—E. COTCHIN.

COOPER, E. R. A. & HOWARTH, I. (1956). **Some pathological changes in the cat brain.**—*J. comp. Path.* **66**, 35-38. [Authors' conclusions modified.] **1691**

Out of 60 cat brains examined in the course of a routine histological study, 4 showed pathological changes. A diffuse fibrillary astrocytoma and an oligodendroglioma were found in the frontal lobe of two animals; the other two lesions were an early leptomeningioma and a discrete microscopic granuloma.

WIESNER, E. (1955). Die prämortale Diagnose der Leukose des Rindes mit Hilfe der Abderhaldenschen Abwehrfermentreaktion. [Diagnosis of leucosis in cattle.]—*Mh. Vet. Med.* **10**, 337-344. **1692**

Tests for leucosis by Abderhalden's defensive proteinase reaction were carried out on 300 cattle. Leucosis was demonstrated in affected cattle at all stages of the disease, also in previously affected cattle which had been

treated with triazine and whose blood picture was now normal.—M.G.G.

SVANBERG, O. & ÅBERG, E. (1955). **On environmental conditions for lymphadenosis in dairy cattle in Sweden.**—*K. LantbrHögsk. Ann.* **22**, 17-24. [In English. French summary.] **1693**

An extended account, in English, of the authors' previously published work [*V.B.* **26**, 173].—R.M.

JULIAN, L. M. (1955). **Segregation of lesion patterns in adult chickens inoculated with cell suspensions of a transplantable lymphoid tumor.**—*Cancer Res.* **15**, 493-496. [Abst. from author's summary.] **1694**

In a group of 18-week-old cockerels given i/m inoculations of a cell suspension of RPL 16 [see *V.B.* **24**, 3227], the times of death were correlated with the lesion patterns produced by the tumour. Four types of lesion syndromes are described:—enlargement of the spleen and liver; enlargement of the kidney on the side of the injection; cardiac involvement; and extensive local growth and general emaciation. Times of death corresponded to this order, those with enlargement of the spleen and liver dying first. It is suggested that the variety of lesion syndromes was due to a process of non-uniform seeding from primary tumours and to the production of cytotoxins.

LESHER, S. & BURMESTER, B. R. (1955). **Plasma phosphatase activities of normal and lymphomatous chickens.**—*Cancer Res.* **15**, 537-540. [Authors' summary modified.] **1695**

A study was made of the activity of acid phosphatase, alkaline phosphatase, and adenosine triphosphatase in the plasma of normal and lymphomatous fowls. The acid phosphatase activity of plasma of all normal and lymphomatous fowls tested was very low, with no significant differences between the two types. Alkaline phosphatase activity increased rapidly in chick plasma immediately following hatching, reaching a peak between the 5th and 16th day, then gradually decreased until the 100th day to a low level which was maintained to 500 days of age. Alkaline phosphatase activity of plasma from lymphomatous birds

was considerably lower than that from the normal ones. High levels of adenosine triphosphatase activity were found in the plasma of 40 of the 42 lymphomatous birds

tested, whilst that of 297 normal birds did not react after an incubation period of 20 min.; however, after 2 hours, all plasma samples gave a positive reaction.

NUTRITIONAL AND METABOLIC DISORDERS

AMMERMAN, C. B. & THOMAS, W. E. (1955). **Relative pH values and buffering capacities of the ruminal ingesta of lambs as affected by various forages.**—*Cornell Vet.* **45**, 443-450. **1696**

Three lambs with permanent ruminal fistulas were used. The pH values and buffering capacities of samples of rumen contents following the ingestion of bluegrass [*Poa pratensis*], lucerne, or Ladino clover, either as hay or as pasture, were studied. When lucerne hay was fed twice daily there were larger diurnal variations in the ruminal pH reading than when Ladino or bluegrass hay was fed. When the respective types of forage were grazed the ruminal pH was lower than when hay was fed. The bloat-provoking forages, lucerne and Ladino clover, did not produce a poorly-buffered condition in the rumen, nor cause sufficient alkalinity to be likely to reduce ruminal motility, although there were distinct differences in the curves obtained in an *in vitro* study of the buffering capacity of the freshly extracted juices of the three types of forage.

—F.E.W.

DAIN, J. A., NEAL, A. L. & DOUGHERTY, R. W. (1955). **The occurrence of histamine and tyramine in rumen ingesta of experimentally over-fed sheep.**—*J. Anim. Sci.* **14**, 930-935. [Authors' summary modified.] **1697**

Histamine and tyramine were identified as toxic constituents in the rumen ingesta of experimentally over-fed sheep. Histamine levels of greater than 70 µg. per ml. of ingesta were obtained. Illness was found to be directly correlated with the level of histamine in the ingesta. As the acidity of the ingesta became lower than about pH 5, histamine formation increased. Below pH 4.5, the levels of histamine reached values greater than 70 µg. per ml. of rumen ingesta and the animals became fatally ill.

WORDEN, A. N. & BUNYAN, J. (1955). **Toxicity studies on sodium copper chlorophyllin.**—*Brit. vet. J.* **111**, 385-387. **1698**

The authors confirmed that 100% sodium copper chlorophyllin, administered in large doses *per os* or parenterally, produces no toxic effects in lab. animals, dogs, cats and fowls.

The faeces of treated animals were intensely coloured and the fowls laid eggs with green yolks.—F.E.W.

WORDEN, A. N., BUNYAN, J., DAVIES, A. W. & KLEISSNER, M. (1955). **The experimental production of 'green yolks' by the oral administration of sodium copper chlorophyllin.**—*J. agric. Sci.* **46**, 384-385. [Abst. from authors' summary.] **1699**

A condition that appears to be identical with "green yolks" as observed in natural cases, was reproduced by daily administration for 4-18 days of 250 to 1,000 mg. sodium copper chlorophyllin 100% in gelatin capsules.

LASSITER, C. A. (1955). **Antibiotics as growth stimulants for dairy cattle: a review.**—*J. Dairy Sci.* **38**, 1102-1138. [Abst. from author's summary.] **1700**

Aureomycin and, to a lesser extent, terramycin, are the only antibiotics which have been studied sufficiently to warrant valid conclusions. No apparent beneficial effects are derived from the feeding of antibiotics to mature dairy cattle. Aureomycin and terramycin stimulate the growth rate of calves from 10 to 30% during the first 16 weeks of age, especially during the first 8 weeks. They also appear to reduce the incidence of calf scours, increase food consumption and efficiency of growth, and improve the condition and well-being of the animal. Present data indicate that aureomycin should be fed at levels ranging from 15-20 mg. per 100 lb. body wt. daily. There appear to be very few advantages in feeding antibiotics after calves are 12-16 weeks old. Two fundamental explanations have been presented regarding the effect of antibiotics on the growth of calves. One postulates a stimulation of the pituitary gland, the other an alteration in energy metabolism probably involving the microflora of the rumen.

BRAUDE, R., COATES, M. E., DAVIES, M. K., HARRISON, G. F. & MITCHELL, K. G. (1955). **The effect of aureomycin on the gut of the pig.**—*Brit. J. Nutr.* **9**, 363-368. [Abst. from authors' summary.] **1701**

There was a tendency to a decrease in the

weight (without appreciable alteration in the length) of the small intestine of pigs fed a supplement of aureomycin at the rate of 20 g./ton (of food) from weaning until slaughter at pork or bacon wt. This loss in wt. is attributed to thinning of the gut. No chemical or histological changes were detected. The liver, spleen and kidneys showed no significant change in wt.

- LUCAS, I. A. M. & CALDER, A. F. C. (1955). **The growth of pigs kept to one level of feeding, in two environments, and fed diets with and without an antibiotic.**—*J. agric. Sci.* **46**, 307-319. [Authors' summary modified.] 1702

Pigs housed in a good or a bad piggery were kept to a medium plane of feeding on diets with and without a procaine penicillin supplement. Between weaning and 100 lb. live wt., pigs housed in the bad piggery grew 6% more slowly and 5% less efficiently than in the good piggery. Neither difference was statistically significant. Between 100 and 200 lb. live wt., pigs housed in the good piggery grew 3% less efficiently than in the bad piggery, but there was no difference in the rate of growth. The difference was statistically significant. Carcasses from pigs housed in the good piggery were fatter than from pigs in the bad piggery, and had higher killing-out percentages. Although dietary antibiotic supplement had no effect upon growth rates or carcass measurements, it resulted in higher killing-out percentages.

- I. LUDVIGSEN, J. & THORBEK, G. (1955). **Virkningen af aureomycin på stofskiftet hos svin og stofskiftet hos galte og sogrise.** [The effect of aureomycin on the metabolism of pigs.]—*Beretn. Forsøgslab. Kbh.* No. 283, pp. 5-30 & 55-61. [In Danish. English and French summaries pp. 39-53.] 1703
- II. LUDVIGSEN, J. & THORBEK, G. (1955). **Varmeproduktionen hos svin på forskellige alderstrin med særlig henblik på staldventilation.** [Heat production of pigs at various periods of age, with special reference to sty ventilation.]—*Ibid.* pp. 31-36; pp. 64-108. [In Danish. English and French summaries pp. 39-53.] 1704

I. Aureomycin is without effect on digestibility of total dry matter, but nitrogen digestibility is improved, though nitrogen retention and synthesis are unaffected. Carbon retention is higher, and synthesis of pantothenic acid increased. Barrows show lower

daily gain and higher food consumption than gilts, which retain more carbon and nitrogen.

II. Heat production by pigs of various ages is discussed in relation to sty ventilation.

—F. R. PAULSEN.

- BARBER, R. S., BRAUDE, R. & MITCHELL, K. G. (1955). **Antibiotic and copper supplements for fattening pigs.**—*Brit. J. Nutr.* **9**, 378-381. [Abst. from authors' summary.] 1705

High-copper mineral mixture and aureomycin (singly or in combination) and copper sulphate supplements produced equal increases in the growth rate of pigs. In the case of the mineral mixture and aureomycin the increase is attributed to increased food consumption while in the case of copper sulphate it is considered due to an improved utilization of the food consumed. The bacon grading of the carcasses was not affected by any of the supplements.

- BOWLER, R. J., BRAUDE, R., CAMPBELL, R. C., CRADDOCK-TURNBULL, J. N., FIELDSEND, H. F., GRIFFITHS, E. K., LUCAS, I. A. M., MITCHELL, K. G., NICKALLS, N. J. D. & TAYLOR, J. H. (1955). **High-copper mineral mixture for fattening pigs.**—*Brit. J. Nutr.* **9**, 358-362. [Authors' summary modified.] 1706

In an experiment involving 182 pigs at 8 centres, 250 p.p.m. copper in the diet improved the mean growth rate of the pigs. The mean growth rate up to bacon weight of the treated animals was 1.48 lb. daily, that of the untreated controls 1.40, the difference being statistically significant. The efficiency of food conversion of the treated animals was 3.53 lb./lb. live-wt. gain, and that of the controls 3.62. This difference was, however, not statistically significant.

- CUNNINGHAM, H. M. & BRISSON, G. J. (1955). **Note on alcoholic fermentation in the stomachs of lambs fed high-glucose diets.**—*Canad. J. agric. Sci.* **35**, 511-512. 1707

The authors described the production of alcohol in the stomach of lambs fed on a fat-free glucose diet. Alcohol was not detectable in the stomach of lambs fed lactose and only occasionally in those fed glucose and lard. On the basis of *in vitro* experiments with bacterial cultures from affected lambs the authors stated that the alcohol was produced by bacterial fermentation of glucose.

—L. W. MACPHERSON.

ADAMSTONE, F. B. (1955). **Histological reactions of baby pigs to synthetic milk diet supplemented with sucrose.**—*Anat. Rec.* **121**, 385-386. [Author's abst. modified.] **1708**

New-born pigs reared on a synthetic milk diet, containing a carbohydrate supplement of sucrose at a level of 58%, died in about a week following severe diarrhoea. Histological studies revealed characteristic kidney damage involving the cells of Henle's loop of the uriniferous tubule, with a progressive rarefaction of the cytoplasm beginning at the base of the cell and extending toward the lumen of the tubule and ultimate rupture of the surface membrane. In general, the condition suggests kidney damage similar to that occurring in diabetes. Certain other reactions occurred less uniformly.

BOWIE, W. C. (1955). **Analytical studies on the carbohydrates in the abomasal content of steers.**—*Thesis, Cornell*, pp. 48. **1709**

Methods are described for the application of paper chromatography to the analytical study of carbohydrates in the abomasal content. Two steers were studied while on a hay and grain diet, and subsequently when turned out to pasture. Fructose decomposition was shown to occur under mild acid hydrolysis. Chromatographic analyses of Soxhlet extractions of abomasal content revealed the presence of only xylose in appreciable quantities; faint glucose spots appeared only twice out of the 19 samples studied. Following acid hydrolysis, arabinose and glucose as well as xylose were detected.—H. L. GILMAN.

LIU, C. H., HAYS, V. W., SVEC, H. J., CATRON, D. V., ASHTON, G. C. & SPEER, V. C. (1955). **The fate of urea in growing pigs.**—*J. Nutr.* **57**, 241-247. **1710**

Urea metabolism was studied in growing pigs on a low protein diet. N^{15} labelled urea was fed orally and results of differential carcass analysis and nitrogen balance compared with those in litter-mate controls fed regular urea. After 3 days a small but definite quantity of urea had been incorporated in the body protein.—P. H. HERBERT.

HOFFMANN, J. A. (1955). Die "Darre" (Glossitis gelatinosa circumscripta), eine bisher unbekannte Mangelkrankheit junger Gänse. [Glossitis in goslings, a nutritional deficiency.]—*Berl. Münch. tierärztl. Wschr.* **68**, 378-380. [English summary.] **1711**

A circumscribed, gelatinous glossitis, affecting goslings from the age of 3-5 weeks,

has occurred for many years in the wooded country of East Thuringia, Germany. A swelling developed at the base of the tongue of affected birds, and it contained a gelatinous yellowish-white mass. Treatment consisted of opening the swelling with a knife. The condition was observed only in housed birds.

—R.M.

DEL SANTO, F. & RAPPINI, F. (1955). Contributo allo studio della epato distrofia tossica (hepatosis diabetica) dei suini. [Toxic liver dystrophy of pigs.]—*Vet. ital.* **6**, 1095-1100. [English, French and German summaries.] **1712**

Curative effects of methionine and vitamin B_{12} in cases of toxic liver dystrophy in pigs suggest that the condition is due to lack of amino-acids involved in transmethylation. Albumin deficiency, shown by electrophoresis, is probably diagnostic.—F. R. PAULSEN.

MOORE, J. H. & TYLER, C. (1955). **Studies on the intestinal absorption and excretion of calcium and phosphorus in the pig. III. The effect of beryllium carbonate on the absorption of phosphorus.**—*Brit. J. Nutr.* **9**, 389-397. [Authors' summary modified.] **1713**

Beryllium carbonate was included in the diet of two pigs at a level of 2.4% for a period of 10 days. On the 11th day the pigs were slaughtered 4 hours after feeding, and the pH, total Ca and P, solubility of Ca and P and phytate P were determined in the contents of the gastro-intestinal tract. The results were compared with those of feeding pigs on an identical diet but with no added beryllium carbonate. P absorption from the intestine was reduced by beryllium carbonate mainly through a decreased phytate hydrolysis. Beryllium carbonate appeared to act as an inhibitor of cereal phytase in addition to precipitating beryllium-phytate compounds. There were indications that it also reduced Ca absorption, but this reduction was probably due to the decreased phytate hydrolysis.

FREUDENBERG, F. (1955). Untersuchungen über die puerperale Hämoglobinurie des Rindes. Zum Vorkommen und zur Ursache per p. Hb. im mitteldeutschen Trockengebiet. [Incidence and causes of puerperal haemoglobinuria in cows in Central Germany.]—*Dtsch. tierärztl. Wschr.* **62**, 422-429. **1714**

Puerperal haemoglobinuria in cows has greatly increased since 1945, particularly in an area of central Germany in which the cows are fed almost exclusively on a diet of fresh

or ensiled sugar-beet leaves and lucerne hay. Such a diet has an unsatisfactory Ca : P ratio of about 4 : 1. The condition occurs most commonly in high-yielding animals shortly after parturition. In addition to haemoglobinuria, there is a low blood phosphorus level, but blood calcium and alkali reserve are not affected. It was possible to set up the condition experimentally by feeding sugar-beet leaves. F. concluded that the disease results not only from hypophosphorosis, but that ingestion of saponins which are said to be present in sugar-beet leaves and lucerne may also play a role.—J. A. NICHOLSON.

MILLS, C. F. (1955). **Availability of copper in freeze-dried herbage and herbage extracts to copper-deficient rats.**—*Brit. J. Nutr.* 9, 398-409. 1715

The physiological response and the storage of copper in the liver were greater when herbage supplement was fed than when cupric sulphate was administered. It is, therefore, considered that the copper in the water soluble component of herbage is more readily available than the free cupric ion. No difference could be demonstrated in the availability of copper from "normal" and from "swayback" herbage. The possible significance of this is discussed.—T.E.G.R.

KERCHER, C. J. & SMITH, S. E. (1955). **The response of cobalt-deficient lambs to leucovorin and chlortetracycline.**—*J. Anim. Sci.* 14, 878-884. [Authors' summary modified.] 1716

Cobalt deficiency in lambs could not be cured by the parenteral administration of leucovorin [a metabolite of pteroylglutamic acid] at levels of 71 μ g., 5 mg., or 15 mg. daily, or by the daily oral administration of 10 mg. of chlortetracycline.

BENNETTS, H. W. (1955). **Copper and cobalt deficiency of livestock in Western Australia.**—*J. Dep. Agric. W. Aust.* 4, 43-63. 1717

The regions and soil types where uncomplicated copper deficiency diseases occur are described with a map showing location of the areas. Calves suffering from non-fatal copper deficiency show retarded growth, abnormalities of limbs, diarrhoea and anaemia. Adult cattle develop a harsh dry coat, anaemia, and lose weight even on good pastures. Later in the season the condition clears up spontaneously. Adult cattle just before, or immediately after, calving often develop the fatal disease known locally as "falling disease" in areas of severe

copper deficiency. Death occurs very rapidly with virtually no prior symptoms and seems to be largely due to heart failure. Horses, pigs, and sheep are not affected, nor are cattle under 15 months. Sheep develop "stringy" or "steely" wool and anaemia and scouring are sometimes observed. Lambs become ataxic when driven, foals develop a type of rickets and young pigs a type of ataxia similar to that in lambs.

Areas where cobalt deficiency occurs in cattle and sheep are defined. The symptoms developed by these species are described. "Coast disease", a dual deficiency of copper and cobalt affecting cattle and sheep, occurs on some of the coastal country and some inland country also. Affected stock recover rapidly when moved to sound inland country. Symptoms of the disease are essentially the same as those of cobalt deficiency, but the disease can only be cured by treatment with both cobalt and copper.

Curative and preventive doses of copper and cobalt in the various classes of livestock are enumerated. The following methods of supplying the minerals are discussed:—topdressing of pastures, use of "licks", addition of solutions to food supplies, to drinking water, or by giving solutions as drenches.

—P. K. BRIGGS.

DIERNHOFER, K. (1955). **Praktische Erfahrungen mit einigen Spurenelementen. [Trace element deficiencies in animals.]**—*Wien. tierärztl. Mschr.* 42, 450-456. [English, French and Italian summaries.] 1718

Cobalt deficiency occurring in several Austrian districts is described. It responds to dosing with 10-50 mg. cobalt salt daily. For piglet anaemia copper and manganese should be given as well as iron. Expectant therapy with balanced mixtures of trace element salts is advocated for several diseases associated with the period when animals are housed between grazing seasons.—P. H. HERBERT.

STEWART, J. & REITH, J. W. S. (1956). **The effects of magnesian liming on the magnesium content of pasture and the blood level of magnesium in cows.**—*J. comp. Path.* 66, 1-9. [Authors' conclusions modified.] 1719

An account of experiments which suggest that the higher magnesium content of the herbage in April and May produced by magnesian limestone dressings considerably reduced the degree of hypomagnesaemia in a herd of cows on a farm where magnesium tetany was prevalent.

STEWART, J. & MOODIE, E. W. (1956). **The absorption of magnesium from the alimentary tract of sheep.**—*J. comp. Path.* **66**, 10-21. 1720

Magnesium salts were administered to anaesthetized sheep by mouth and by cannulae inserted into various parts of the digestive tract, and the level of Ca, Mg, and inorganic P determined at intervals in the efferent veins from the different regions. Absorption of magnesium occurred principally from the duodenum and small intestine, but sometimes, after heavy dosage, from the rumen, abomasum duodenum, small intestine, and caecum. Blood phosphate was increased, and Ca decreased slightly by large doses of Mg, and there was no evidence that Ca and Mg followed a similar metabolic route. Magnesium nitrate given by mouth was more efficiently absorbed than magnesium sulphate.—A. B. PATERSON.

SLINGER, S. J., PEPPER, W. F. & ARTHUR, D. (1955). **Effect of phosphorus, vitamin E and environment on growth and the incidence of perosis in turkeys.**—*Poult. Sci.* **34**, 935-941. 1721

Tests involving some 570 turkey poulters gave the following results: 0.5% inorganic phosphorus in the diet was adequate during the starting period (up to 8 weeks). Supplementary vitamin E given at the rate of 5 I.U. per lb. had little or no effect up to 8 weeks of age, but thereafter tended to increase weight in birds fed 0.3 and 0.5% phosphorus during the starting period, and to decrease weight in those fed 0.7 and 0.9%. It reduced the incidence of perosis, except in birds fed 0.3% phosphorus during the starting period. Birds reared on deep litter consumed more mash in relation to grain than birds reared on a slatted floor. They were heavier, utilized food more efficiently and showed a much lower incidence and severity of perosis. Bumblefoot was prevalent among males reared on the slatted floor, but almost absent in those on deep litter.—M.G.G.

BERN, H. A., ELIAS, J. J., PICKETT, P. B., POWERS, T. R. & HARKNESS, M. N. (1955). **The influence of vitamin A on the epidermis.**—*Amer. J. Anat.* **96**, 419-447. 1722

Rats were given daily topical and s/c applications of vitamin A for periods of 10-60 days. Acanthosis occurred in those treated topically and occasional parakeratotic areas were present. In those treated s/c the epidermis was not affected. Cytological and electron microscope studies revealed no

changes in the tonofibril system, but eventual reduction of "intercellular" bridges to desmosomes occurred in addition to the hyperplasia. No evidence of interference with keratinization was seen. Vitamin A induced acanthosis of the epidermis in the nipple region of male g. pigs, but did not interfere with response to oestrogen.—D. POYNTER.

KAGAN, B. M. & KAISER, E. (1955). **Vitamin A metabolism in infection. Effect of sterile abscesses in the rat on serum and tissue vitamin A.**—*J. Nutr.* **57**, 277-286. [Authors' summary modified.] 1723

Sterile abscesses were produced in rats by single or multiple s/c or i/m injections of turpentine or sweet almond oil. The serum levels of vitamin A fell markedly. The vitamin A content and concentrations of the liver also decreased.

DEADRICK, R. E., BIERI, J. G. & CARDENAS, R. R., JR. (1955). **Effects of octachloronaphthalene on vitamin A metabolism in the rat.**—*J. Nutr.* **57**, 287-295. [Authors' summary modified.] 1724

The addition of 0.05 to 0.30% of octachloronaphthalene to the vitamin A-free diet of rats greatly accelerated the loss of vitamin A from the liver. There was no effect on vitamin A or vitamin E in the blood, nor did the liver content of vitamin E change significantly. Utilization of injected carotene was not impaired, but a marked decrease in utilization of carotene given *per os* occurred.

VELLING, G. (1955). **Ernaeringslidelse hos aellinger og kyllinger, formentlig fremkaldt af mangel på vitamin E. [Nutritional disorder in ducklings and chickens, presumably caused by vitamin-E deficiency.]**—*Nord. VetMed.* **7**, 573-588. [In Danish. English, and German summaries.] 1725

A considerable increase in the incidence of a disorder in ducklings and chickens which has previously occurred only sporadically in Denmark was noted in 1953 and 1954; 22 cases in ducklings were diagnosed out of a total of 337 sent in to the Veterinary Poultry Research Laboratory during these years, and 80 cases in chickens. In ducklings the disease was characterized by degeneration of the skeletal and gizzard muscles, with hyaline necrosis of fibres and infiltration of cells in the connective tissue. In chickens the findings were typical of the condition described in the U.S.A. as "crazy chick" disease. Affected birds sometimes recovered following a reduc-

tion of the protein and cod-liver oil intake and an increase in the grain ration. The author suggested that the increase in incidence might be due to faulty feeding of breeding stock supplying eggs to large hatcheries.

—F. R. PAULSEN.

CARVALHO DA SILVA, A., DE ANGELIS, R. C., APPARECIDA PONTES, M. & MANSUR GUÉRIOS, M. F. (1955). **The domestic cat as a laboratory animal for experimental nutrition studies. IV Folic acid deficiency.**—*J. Nutr.* **56**, 199-213. 1726

Experimental folic acid deficiency in the cat is described in detail together with technical methods of producing it. Sulphaguanidine and sulphaphthalidine were used as provoking agents. Epidemic anaemia may be a confusing factor in this species.—P. H. HERBERT.

NELSON, M. M., WRIGHT, H. V., ASLING, C. W. & EVANS, H. M. (1955). **Multiple congenital abnormalities resulting from transitory deficiency of pteroylglutamic acid during gestation in the rat.**—*J. Nutr.* **56**, 349-269. 1727

Pteroylglutamic acid-deficient diets fed for only 48 hours between 7 and 12 days after implantation had occurred in female rats, induced abnormalities or death in 70-100% of the embryos. The same diet had no effect at earlier or later periods. The dams were in good condition throughout. Anomalies in many different systems are described, with photographs, and type and incidence related to the time and duration of feeding the deficient diets.—P. H. HERBERT.

STOTHERS, S. C., SCHMIDT, D. A., JOHNSTON, R. L., HOEFER, J. A. & LUECKE, R. W. (1955). **The pantothenic acid requirement of the baby pig.**—*J. Nutr.* **57**, 47-53. 1728

Pantothenic acid deficiency was produced in baby pigs by feeding them, after an initial depletion period, a "synthetic milk". The main deficiency symptom was a profuse diarrhoea progressing to death and often accompanied by locomotor incoordination. For optimum growth and feed efficiency the requirement was about 12.5 mg. calcium pantothenate per kg. solids. Pathological data are also recorded, with specific findings in the large intestine and in nerve tissue and adrenal cortex.

—P. H. HERBERT.

MILLER, E. R., SCHMIDT, D. A., HOEFER, J. A. & LUECKE, R. W. (1955). **The thiamine re-**

quirement of the baby pig.—*J. Nutr.* **56**, 423-430. 1729

Metabolic and other data on 55 piglets are presented. The minimum thiamine requirement is around 1.5 mg./kg. food solids. At less than 1 mg./kg. gross lesions occurred.

—P. H. HERBERT.

HAWKINS, W. W. (1955). **Skin symptoms of vitamin-B₆ deficiency in the dog.**—*Science*. **121**, 880. 1730

Rats showing other typical signs of vitamin B₆ deficiency seldom developed acrodynia unless desoxypyridoxine was fed. Dogs never showed skin changes except a few puppies which were given desoxypyridoxine while on a 40% casein diet. Desoxypyridoxine may have effects other than those due to interference with vitamin B₆ metabolism.

—P. H. HERBERT.

I, II & III. LUDVIGSEN, J. (1955). **Under-søgelse over den såkaldte "muskeldegeneration" hos svin. II. Nogle virkninger af jodkasein og metylthiouracil på stofskiftesprocesserne, muskulaturen og skjoldbrusk-kirtlen hos unge voksende svin. III. Virkningen af jodkasein, tyroxin og diiodhistidin på tilvækst, foderforbrug, muskulatur, skjoldbruskkirtel og kødkvalitet. IV. Studier over pathogenesen. ["Muscular degeneration" in pigs. II. Effects of iodinated casein and methylthiouracil on metabolism, musculature and the thyroid gland. III. Effect of iodinated casein, thyroxine and diiodohistidine on growth, food utilization, musculature, the thyroid gland and pork quality. IV. The pathogenesis of "muscular degeneration" in pigs.]**—*Beretn. Forsøgslab. Kbh.* No. 278, pp. 59; No. 279, pp. 60; No. 284, pp. 84. [In Danish. English summaries.] 1731

I. Three healthy young pigs, weighing 40 kg., which were given 1 g. iodinated casein daily in the food for 14 days and again 14 days before reaching slaughter weight developed severe total "muscular degeneration". Three similar pigs given 0.5 g. methylthiouracil daily for 28 days and again for 14 days before slaughter were normal at meat inspection. Control pigs weighing 30 kg. reached 90 kg. in 182 days as compared with 200 days in the treated pigs. As previous work had shown that treatment with iodinated casein 9-14 days before slaughter had a curative effect in pigs with "muscular degeneration", it was concluded that the condition

resulted from the early treatment which caused a blockage of thyroid-stimulating hormone from the pituitary gland and thus inactivated the thyroid. The average weight of the thyroid in the iodinated casein group was 7.9 g. as compared with 29.8 g. in the methylthiouracil group. Balance studies were also recorded.

II. In pigs of a particular strain known to develop severe "muscular degeneration", daily treatment for 14 days before slaughter with 3 g. of a preparation of iodinated casein having 0.4% active principle had a more beneficial effect on the musculature than similar treatment for 16 days (1g. daily) of another preparation having 26.8% active principle. *l*-Thyroxine was ineffective and diiodohistidine (injected subcutaneously) had little effect. Regular exercise in outdoor pens was beneficial especially to the groups of muscles most in use.

III. "Muscular degeneration" in pigs involves high lactic acid in musculature, variable pH and buffering, and high glycogen. The back fat is thin, and the bacon meaty, as protein synthesis is high. Prevalence during summer is due to hormonal disturbances, the dominance of insulin causing glycogen deposition.—F. R. PAULSEN.

MCCLYMONT, G. L. & SETCHELL, B. P. (1955). **Ovine pregnancy toxæmia. II. Experimental therapy with glycerol and glucose.**—*Aust. vet. J.* **31**, 170-174. 1732

Treatments of experimentally induced pregnancy toxæmia with daily doses of glycerol *per os* (3 ml./kg. body wt.) and twice-daily injections of glucose solutions subcutaneously (3 ml. of a 60% soln./kg. body wt.) were assessed. With glycerol the mortality rate was reduced from 83% to 25%. For optimum results in field cases early treatment is recommended and it should be continued until full appetite is regained. Affected sheep must have ready access to food and water and be kept out of the sun.

—D. C. BLOOD.

NOLLER, C. H., HENTSCHL, A. F., HUFFMAN, C. F. & WILLIAMS, J. A. (1955). **Intravenous administration of cobalt and methionine on hyperglycemia and cobalt toxicity in cattle.**—*Mich. St. Univ. Vet.* **16**, 42-45 & 62. [Abst. from authors' summary.] 1733

Milking and non-milking cows were used to determine the effect of i/v injection of 0.25, 0.5, 1.0, and 2.0 g. of cobalt sulphate on blood glucose. Blood samples were taken immediately before and half an hour, one hour, 2 hours and

4 hours after injection. Mild hyperglycaemia occurred following the administration of 0.25 g. There was a progressively increased hyperglycaemia with each increase in dosage. The peak was observed half or one hour after injection. The decline in blood glucose was observed 2 hours and 4 hours after injection. Two cows injected i/v with 5 g. of DL-methionine showed no appreciable change in blood glucose. Injection of a mixture of 2 g. of cobalt sulphate and 5 g. of methionine resulted in marked hyperglycaemia similar to that produced by cobalt sulphate alone. Similar results were obtained with 1 g. of cobalt sulphate plus 5 g. of methionine. The level of methionine used lessened but did not prevent the symptoms of cobalt toxicity.

HALLGREN, W. (1955). **Studies on parturient paresis in dairy cows.**—*Nord. VetMed.* **7**, 433-463. [In English. German and Swedish summaries.] 1734

This is a detailed report of 3 years' observations on 881 cows developing parturient paresis. I/v injection of calcium gave good results in 85% of cases. The remainder (77 animals) were studied in detail and results emphasize that empirical Ca therapy, though often unavoidable, may be strongly contraindicated in some cases. Metabolic studies are reported and the use of crude, sometimes directly misleading, estimations of urine calcium is deprecated.—P. H. HERBERT.

SIEKMANN, F. W. & LAMMERS, H. (1955). **Hinweis auf einen einfachen Acetonurie-Test beim Rind. [A simple test for acetone in the urine of cattle.]**—*Dtsch. tierärztl. Wschr.* **62**, 514-515. 1735

The use of "nitroprusside tablets" for testing urine for acetone was compared with the conventional method in 82 cattle. Both in the 64 negative and the 18 positive samples the two tests showed good agreement, the dry reagent being simple and reliable for use even with high dilutions. The dry reagent retains its reactivity better than the conventional fluid reagents.—G. P. MARSHALL.

ROGERS, J. A. (1955). **A contribution to a better understanding of ketosis in dairy cows.**—*J. Amer. vet. med. Ass.* **126**, 129-130. 1736

R. described a colour test on blood serum or plasma, using a dry reagent ("denco") supplied for testing for acetone in human urine. In 298 cases of ketosis tested in the field an inverse relationship was found between the colour reaction and the blood sugar value.

Rough quantitation was possible and the reaction was specific and of value for prognosis and control of treatment.

—P. H. HERBERT.

ADLER, H. J. (1955). **Pathological-neuro-physiology of ruminant ketosis.**—*Thesis, Cornell*, pp. 59. **1737**

In view of the similarity of the metabolic background of pregnancy toxæmia in sheep and bovine ketosis, and also the presence of isopropanol in the circulating blood and ruminal fluid of sheep affected with pregnancy toxæmia, the physiological effects of isopropanol on normal and non-pregnant ewes was studied. The isopropanol which occurs in the blood, milk and ruminal fluid in bovine ketosis and pregnancy toxæmia in sheep probably originates from acetone in the following manner: acetone from the blood is excreted in relatively large quantities in the saliva. This is swallowed and passes to the rumen in which the acetone is reduced to isopropanol by the ruminal bacteria. Other factors that have a

recognized depressant effect on the nervous system, *e.g.* hypoglycaemia, acetonaemia and the presence of acetoacetic acid in the circulation, operate simultaneously and presumably synergistically with isopropanol.

—H. L. GILMAN.

VIGUE, R. F. (1955). **Evaluation of various treatments for ketosis.**—*Vet. Ext. Quart. Univ. Pa. No. 140*, pp. 2-31. **1738**

Nine methods of treatment were compared with a "control" method of good pasturing or "placebo" supplements. Animals were selected at random and about 10 animals fell into each group. Results are reported and discussed—some methods yielded good results in all groups, but adrenocorticotrophic hormone and cortisone (though not specific) were the most useful. Sample case records with biochemical data etc. are given. [This is a brief report of what was evidently an extended and carefully organized project. 157 references are given.]—P. H. HERBERT.

See also absts. 1508-1507 (diet and TB. in g. pigs and mice); 1831 (report, Northern Ireland).

DISEASES, GENERAL

GREVE, D. (1955). Mikroelektrophoretische Untersuchungen der Serumweißverhältnisse des Rindes bei Leukose, Brucellose und Tuberkulose. [Micro-electrophoretic examination of the blood proteins of cattle in leucosis, brucellosis and TB.]—*Dtsch. tierärztl. Wschr.* **62**, 536-538 & 540. **1739**

Electrophoretic examinations, total protein analyses and leucocyte counts were carried out on sera of cattle with clinical leucosis and leucocytosis (13), with leucocytosis alone (165), with TB. and brucellosis (76) and with a variety of clinical conditions (12), *e.g.* ketosis, pneumonia, enteritis and post-natal paralysis. Only the first group had a low level of serum protein with an increase in α - and β -globulins, while the second and third groups had increased α - and γ -globulins and γ -globulins respectively. The fourth group had a normal serum picture. Quantitative data determined with the Antweiler micro-electrophoresis apparatus are tabulated. Although it was not possible to distinguish the different conditions with certainty by electrophoresis, the method is considered of some value when coupled with leucocyte counts and can be used to differentiate TB. and brucellosis from other diseases.—A. B. PATERSON.

NOBEL, T. A. (1955). **Circling syndrome in a mule due to hyperplasia of the pineal gland: a case report.**—*Cornell Vet.* **45**, 570-575. **1740**

P.M. examination of a 13-year-old female mule showing symptoms of circling to the right revealed hyperplasia of the pineal gland. The gland was four times heavier than normal. Large spheroidal cells of the parenchyma were separated by a scanty connective tissue stroma, which was infiltrated by cells resembling lymphocytes. Many cells of both components were pigmented, especially those in a perivascular position. The parenchymal cells were enlarged. Several cysts were present. Blood vessels were highly congested. A few small corpora arenacea were found. The findings are discussed with reference to previous literature.—M.G.G.

WILLIAMS, E. I. (1955). **A study of reticulo-ruminal motility in adult cattle in relation to bloat and traumatic reticulitis with an account of the latter condition as seen in a general practice.**—*Vet. Rec.* **67**, 907-911 & 922-927. **1741**

Methods of following peristaltic processes in the rumen and reticulum are described in detail. By combined auscultation and palpa-

tion two types of ruminal contraction can be differentiated. One of extra-ruminal origin is always accompanied, in healthy animals, by gas eructation. The other, primary, movement originates within the rumen and is not so accompanied. Physiological sequences were further clarified by visual and manual examination of the interior of the rumen in a number of animals requiring operation. These physiological observations are described.

A method of differential diagnosis of traumatic reticulitis, based on the combined auscultation / palpation technique proved reliable in 64 operated animals. Rumenotomy is strongly advocated in all early cases. Although many probably recover spontaneously, the risk of complications far exceeds that of surgical intervention.

—P. H. HERBERT.

SANDER, W. (1955). Betrachtungen zum Blutbild bei der Reticuloperitonitis traumatica des Rindes. [**Observations on the blood picture in traumatic reticuloperitonitis in cattle.**]—*Mh. Tierheilk.* 7, 180-195. 1742

From a study of 69 cattle with traumatic reticulitis in various stages, S. confirmed the diagnostic and prognostic value of changes in the w.b.c. picture. [See also *V.B.* 17, 1595.]

—R.M.

KINGREY, B. W. (1955). **Experimental bovine traumatic gastritis.**—*J. Amer. vet. med. Ass.* 127, 477-482. 1743

Two pieces of baling wire and one nail were administered in a gelatin capsule to each of 10 cattle and about 48 hours after the onset of symptoms, the foreign bodies were successfully removed by surgery; 25 of these were found in the reticulum, 3 in the anterior dorsal sac of the rumen, and 2 on the floor of the rumen. Signs of gastritis appeared within 3 days and subsided after 48 and 72 hours. With the exception of pain over the area of the xiphoid cartilage, the general picture was that of a common febrile disease, with fluctuating symptoms of elevated temperature, neutrophilia, impaired appetite, suppression of milk flow, atony of the rumen and constipation. Surgical removal of foreign bodies within 48 hours of appearance of symptoms should give a 100% recovery rate.—A. B. PATERSON.

SAGNER, G. (1955). Hauttemperaturmessungen an Rindern in der Head' schen Zone (nach Kalchschmidt). [**Skin temperature in zones of referred pain measured in cattle with**

foreign body reticulitis.]—*Berl. Münch. tierärztl. Wschr.* 68, 297-298. [English summary.] 1744

S. reported a fall of 2° to 3°C. in the skin temp. in the region of the seventh rib in 6 acutely affected cattle. In 4 out of 6 cattle which had passed the acute stage and which were examined at a warmer air temp., the fall was 1.5°C. In the other 2 animals, no fall in temp. was detected.—M.G.G.

PAATSAMA, S. & TALANTI, S. (1955). Röntgenologische Untersuchungen bei experimentell hervorgerufener Reticuloperitonitis bei kleinen Wiederkäuern. I. Versuchsabschnitt. [**X-ray investigation of experimental reticuloperitonitis in small ruminants.**]—*Dtsch. tierärztl. Wschr.* 62, 412-416. 1745

The authors, working in Helsinki, administered nails to 6 sheep and 2 goats, and followed their location in the reticulum by means of radiography, performed at intervals of 1-5 days for up to 200 days. Traumatic reticulo-peritonitis developed in all animals. They compared the site and extent of the lesions with the functional activity of the reticulum and with P.M. findings.—R.M.

McSHERRY, B. J. & COGLIN, C. L. C. (1955). **Report of an anaemia of unknown origin in cattle.**—*Canad. J. comp. Med.* 19, 307-312. 1746

An anaemia affecting cattle of all ages is reported in a herd in Ontario. The data from blood examinations on affected stock are presented in detail. The authors describe the condition as an aplastic anaemia of unknown aetiology.—L. W. MACPHERSON.

NIELSEN, S. W., HORNEY, F. D., HULLAND, T. J. & ROE, C. K. (1955). **Mucosal disease of cattle in Ontario.**—*Canad. J. comp. Med.* 19, 318-324. 1747

An account of the incidence, clinical signs and pathology of mucosal disease of cattle in Ontario. The symptoms and lesions bear a close resemblance to the condition described by Ramsey & Chivers in Iowa [*V.B.* 24, 3272]. The lesions are confined to the alimentary tract: in the buccal cavity, epithelial defects ranging from small punctate erosions to large confluent erosions involving the entire oral mucosa; in the pharynx and oesophagus, erosions having a longitudinal orientation; in the abomasum and small intestine, catarrhal inflammation; in the caecum and colon, more severe inflammatory change with haemorrhagic and cystic foci in the mucosa. Examina-

tion for inclusion bodies was negative. Attempts to transmit the disease by scarification of the buccal mucosa, by drenching and by parenteral administrations of filtrates all proved negative and it is suggested that a stress factor may be involved in addition to an infective agent. Bacteriological examination of faecal samples and rectal scrapings yielded no evidence of pathogens either during life or P.M.—L. W. MACPHERSON.

PRIOUZEAU, M. (1955). Étude clinique de la névrite chronique dorso-lombaire des bovidés. [**Chronic neuritis of the spinal nerves supplying the dorso-lumbar region in cattle.**]—*Rec. Méd. vét.* **131**, 179-185. **1748**

An account of clinical observations of the disease as it affects draught and other cattle exposed to chilling conditions. P. described acute and chronic symptoms, the course of the disease, lesions and pathogenesis, and discussed differential diagnosis, prognosis and treatment.—M. B. HAWKSLEY.

WILCZYŃSKI, M. (1955). Ropne zapalenie płuc i opłucnej u jagniąt i owiec jako choroba środowiskowa. [**Suppurative pneumonia and pleurisy in sheep and lambs.**]—*Méd. vét., Varsovie*, **11**, 684-686. [In Polish.] **1749**

W. described a chronic disease with a high mortality rate (up to 30%) especially in winter and early spring, usually occurring among underfed animals housed in unhygienic conditions. The bacterial flora of the lungs of affected animals varies so much that probably the organisms are secondary invaders. Affected sheep cough, shiver and become gradually emaciated. P.M. examination usually reveals extensive hepatization of the lungs, pleurisy and myocardial degeneration, no other organ being affected. Symptomatic treatment is ineffective. Prophylactic measures should include housing in clean, well ventilated premises, adequate feeding, and isolation of lambs from ewes as soon after weaning as possible.—M. GITTER.

JANOWSKI, H., TRUSZCZYŃSKI, M. & KUREK, C. (1955). Choroba obrzękowa trzody chlewnej. Stwierdzenie ognisk choroby w Polsce. [**Oedema disease of pigs in Poland.**]—*Méd. vét., Varsovie*, **11**, 652-656. [In Polish. English and Russian summaries.] **1750**

An account of 5 outbreaks. Oedema disease is rare in Poland. The authors discussed the literature; they appear to favour

the theory that vitamin B deficiency is linked up with the pathogenesis of the condition.

—M. GITTER.

ERDÖS, J., HIRT, G. & SZABÓ, I. (1955). A sertések ún. "gyomorbéloedemájának" vagy "vibrio-dysenteriajának" előfordulása hazánkban. [**Gut oedema or vibronic dysentery in pigs in Hungary.**]—*Mag. állator. Lapja*, **10**, 408-414. [In Hungarian. Abst. from English and Russian summaries.] **1751**

An account of P.M. examination of young pigs with oedema disease. Histologically there was marked eosinophilia of the tissues. Vibrios were isolated from the oedematous stomach wall and intestines and on one occasion from the mesenteric lymph nodes. The role of weaning, feeding and housing was discussed.—E.G.

GOODWIN, R. F. W. (1955). Some common factors in the pathology of the new-born pig. —*Brit. vet. J.* **111**, 361-372. **1752**

G. discussed causes of death in new-born piglets, basing his conclusions on the observation of 50 farrowings. He gave a diagram showing the inter-relationship of possible factors involved.—R.M.

SHERRY, S., CALLAWAY, D. W. & FREIBERG, R. (1955). Prevention of postoperative adhesions in the dog by intravenous injections of plasminogen activators.—*Proc. Soc. exp. Biol., N.Y.* **90**, 1-4. [Authors' conclusions modified.] **1753**

In dogs with an experimental traumatic peritonitis, the i/v injection of streptokinase (SK) alone in large doses, or of SK in smaller amounts mixed with a partially purified human plasminogen preparation, prevented or modified the development of post-operative adhesions.

COVER, M. S., MELLEN, W. J. & GILL, E. (1955). Studies of hemorrhagic syndromes in chickens.—*Cornell Vet.* **45**, 366-386. **1754**

Of 31 field outbreaks of haemorrhagic disease in broiler chickens some were associated with the use of sulphaquinoxaline. The gross pathology, histopathology and haematology of the condition and techniques for the determination of clotting time and prothrombin time are described. Attempts to transmit the condition were unsuccessful. A haemorrhagic syndrome due to an avitaminosis K was produced experimentally, but the pathology and haematology differed from those of the field condition.—E. A. GIBSON.

MOON, L. E., HARLOW, H. F. & BOGUMILL, G. P. (1955). Some effects of periodic X-radiation.—*Science*, **122**, 863-864. 1755

Twenty-three monkeys were each exposed to 100r once every 35 days until they died. Most of them died after 12 exposures. Haematological and P.M. findings were described. Learning ability was not affected until just before death.—R.M.

OESTER, Y. T., DAVIS, O. F. & FRIEDMAN, B. (1955). Experimental arteriopathy. Spontaneous, epinephrine, thyroxine, and cholesterol-induced forms. — *Amer. J. Path.* **31**, 717-724. 1756

S/c injection of thyroxine produced in rabbits a higher incidence and severity of medial arteriosclerosis resulting from epinephrine given i/v. Cholesterol caused very frequent and rapid proliferative atherosclerosis. Combined treatments with all three substances resulted in most severe arteriosclerosis, especially atheromatosis.

—F. R. PAULSEN.

MORAN, T. J. (1955). Experimental aspiration pneumonia. IV. Inflammatory and reparative changes produced by intratracheal injections of autologous gastric juice and hydrochloric acid.—*Arch. Path.* **60**, 122-129. 1757

P.M. examinations of rabbits submitted to intratracheal injection of gastric juice, hydrochloric acid, pepsin and steapsin revealed many inflammatory, reparative and fibrotic lesions of the lungs which had apparently been caused by aspiration. Acute or subacute pulmonary oedema in children might also result from aspiration of gastric material.

—F. R. PAULSEN.

See also abstr. 1838 (book, advances in veterinary science).

CORSICO, G. (1955). Su due nuovi casi di xantinosi renale del vitello. [*Kidney lesions in calves caused by accumulation of xanthine derivatives.*]—*Clin. vet., Milano*. **78**, 225-234. [English summary.] 1758

Kidney lesions in 2 calves involved accumulation in the collecting and papillary tubules of crystals of a purine body, possibly xanthine.—F. R. PAULSEN.

PECKHAM, M. C. (1955). Xanthomatosis in chickens.—*Amer. J. vet. Res.* **16**, 580-583. 1759

An outbreak of illness in a flock of chickens was treated with potassium chloride and penicillin. As the birds did not respond to treatment, sulphaquinoxaline was added to the drinking-water. A number of chickens died with haemorrhages in the spleen, nephritis, ascites and hydropericardium. One had a mottled liver and large irregular necrotic areas in the spleen. Medication was discontinued and mortality stopped. Eight weeks later about 5% of the pullets, which had been moved to laying houses, had swollen wattles. Some time later, eight-month-old birds were submitted for examination and showed unilateral or bilateral swellings of the wattles with a gelatinous transudate. The skin on the breast and abdomen was thickened and doughy and also contained gelatinous transudate. Histological examination of the affected skin and wattles revealed a xanthomatous-type lesion, consisting of foam cells, fibroblasts, lipid droplets and lenticular spaces. There was a high titre of cholesterol in the affected tissues. The aetiology of the condition was considered to be unknown.

—S. BRIAN KENDALL.

POISONS AND POISONING

BENTZ, H., KÜHN, W. & HERDMANN, I. (1955). Zur Arsenvergiftung bei den Haustieren mit besonderer Berücksichtigung des As-Gehaltes von Haar und Klauen des nicht vergifteten Rindes. [*Arsenic poisoning in animals. Normal arsenious oxide content of hair and hooves in cattle.*]—*Berl. Münch. tierärztl. Wschr.* **68**, 346-348. [English summary.] 1760

As a result of the widespread use of arsenic compounds in pest control, increasing numbers of cases of arsenical poisoning, particularly in large animals, are seen. To assess the extent of chronic arsenical poisoning

in cattle, arsenic determinations in samples of hair and hoof paring were made, from 0.05 to 1.3 mg.% As_2O_3 being found in apparently normal animals.—J. A. NICHOLSON.

SIDDIQUI, A. H. (1955). Fluorosis in Nalgonda district, Hyderabad-Deccan. — *Brit. med. J.* Dec. 10th, 1408-1413. 1761

The clin. features of fluorosis are described in the inhabitants of 3 villages in the Nalgonda district. In Kamaguda, where the fluorine content of the drinking water ranged from 9.2-11.8 p.p.m., poultry was also affected. Chicks developed ankylosis of the joints of the

leg after 10 months in the village. Analysis of the bones of a 10-month-old chicken from Kamaguda revealed 37.8 mg. fluorine/100 g. dry material.—M.G.G.

MARIAKULANDAI, A. & VENKATARAMAIAH, P. (1955). **Biochemical study of fluorine intoxication. I. Etiology, prophylaxis and cure.**—*Indian J. vet. Sci.* 25, 165-181. [Abst. from authors' summary.] 1762

Fluorine intoxication was noted in cattle in parts of Madras State (now Andhra State). The disease was locally attributed to the greater use of groundnut haulms as cattle food as a result of increased cultivation of groundnuts, but no evidence to support this belief could be adduced from this study. However, phosphorus deficiency might have been a contributing cause to the severe manifestation of the affection initially due to ingestion of fluorine in drinking water. The primary cause of the disease was definitely correlated with excess of fluorine in the drinking water derived from the underlying soil and rocks of the area. Lime at 500 p.p.m. reduced the fluorine content of natural waters below the toxic level, while 3 oz. of bone meal daily for each animal relieved the fluorine intoxication.

LEONARD, R. O. & BURNS, R. H. (1955). **A preliminary study of selenized wool.**—*J. Anim. Sci.* 14, 446-457. 1763

The study showed that the selenium content of the blood and of the wool were closely related. After sheep had grazed a selenium-free pasture the selenium level in the blood fell considerably. The selenium content of the wool was not the cause of its harshness, but had a correlation with the number of distorted fibres.—W. S. MARSHALL.

EDSON, E. F. & FENWICK, M. L. (1955). **Laboratory diagnosis of dinitro-ortho-cresol poisoning in cattle.**—*Vet. Rec.* 67, 450-452. 1764

Before specimens from cattle are tested for dinitro-ortho-cresol, the β -carotene must be removed.—M.G.G.

PANCIERA, R. J. (1955). **The diagnosis of acute fatal poisoning by organic phosphorus insecticides using a histochemical technique.**—*Thesis, Cornell*, pp. 31. 1765

Isolation and identification of the chemicals in commercial insecticides is very difficult or impossible on P.M. examination. All share the common property that they are potent inhibitors of cholinesterases. These

studies were designed to demonstrate this biochemical lesion and apply it to the diagnosis of poisoning by some anti-cholinesterase compounds. Eight animals of three domestic species were fatally poisoned by the injection of organic phosphorus insecticides. Samples of intercostal muscle were collected at various intervals after death. Enzyme activity in poisoned animals was markedly or completely inhibited. Reactivation of inhibited enzyme occurred after death in the tissues of all poisoned animals, but at no time did reactivation result in maximal enzyme activity as observed in fresh tissues from control animals. Differentiation between acetylcholinesterase activity in tissues from poisoned animals and that in control animals was distinct in all samples collected up to 24 hours after death of the animal, even when subsequently preserved by refrigeration for a week or when frozen for 2 weeks.—H. L. GILMAN.

MOSINGER, M. & FIORENTINI, H. (1955). **Réactions hépatiques, rénales, ganglionnaires et spléniques dans l'intoxication expérimentale par le trichloréthylène chez le chat. [Lesions of the liver, kidneys, lymph nodes and spleen in experimental trichlorethylene poisoning in cats.]**—*C. R. Soc. Biol., Paris*. 149, 150-152. 1766

Cats, exposed daily for 4-6 months to atmospheres containing 20 p.p.m. of trichlorethylene, showed either a diffuse or a centrolobular hepatitis, widespread glomerulo-tubular nephritis and hyperplasia of the lymph nodes and spleen.—M. B. HAWKSLEY.

DEDIÉ, K., MÜLLER, L. F., PALLASKE, G., BEER, J. & REICHEL, K. (1955). **Die Ursache der in Mitteldeutschland aufgetretenen Rinderkrankheit (X-Krankheit, Hyperkeratose). Zweite vorläufige Mitteilung. [Cause of hyperkeratosis in Germany. II.]**—*Mh. VetMed.* 10, 241-244. 1767

Investigation into illness amongst cattle in which there was a 6% mortality rate is reported. The symptoms and lesions resembled those of hyperkeratosis and experimental evidence showed that the condition was due to the ingestion of oil-soaked binder twine which had become mixed with the fodder.

—J. A. NICHOLSON.

ZELLER, R. (1955). **Über Schimmelpilzvergiftungen bei Haustieren. [Poisoning in domestic animals by moulds.]**—*Berl. Münch. tierärztl. Wschr.* 68, 99-101. [English summary.] 1768

Owing to the difficulty of obtaining fodder in Berlin, hay and straw heavily contaminated with moulds, particularly *Aspergillus*, *Mucor* and *Penicillium* species, has to be used. This has been responsible for illness amongst horses. The clin. symptoms are not characteristic, the most prominent being colic with, in some cases, evidence of gastric and intestinal inflammation; nervous and allergic symptoms have also been seen.—J. A. NICHOLSON.

SPERRY, O. E., DOLLAHITE, J. W., MORROW, J. & HOFFMAN, G. O. (1955). **Texas range plants poisonous to livestock.**—*Bull. Tex. agric. Exp. Sta.* No. 796, pp. 47. 1769

Sixty-nine plants are listed in this bulletin. Part I contains the 34 most hazardous plants on the range; Part II contains 22 plants that have low toxicity or are not frequently grazed; Part III contains 13 plants that are occasionally toxic to livestock. Both common and scientific names are given. Details of appearance, distribution, control, animals poisoned, toxic principles, symptoms and treatment of poisoned animals, together with photographs, are given for plants listed in Parts I and II.

—M.G.G.

MARCZEWSKI, H. (1955). Przypadek masowego zatrucia świń łubinem gorzkim. [**Lupin poisoning in pigs.**]—*Méd. vét., Varsovie*. 11, 738. [In Polish.] 1770

An account of an outbreak of poisoning in which, as a result of accidental feeding with ground lupin seeds, 87 pigs of all ages became suddenly dull, refused food, showed evidence of tympany and some became recumbent. The temperature was abnormally raised in 2 animals; some vomited and a nursing sow lost milk. In a few animals manifesting severe symptoms icterus was noted on the 3rd day. All the animals responded to treatment with stimulants, purgatives and calcium borogluconate and all except 2 recovered; the latter were killed and P.M. examination revealed tympany of the small intestine, gastritis and degenerative changes in the liver.

—M. GITTER.

HUPKA, E. (1955). Ist die Verfütterung von Senecio (Kreuzkraut) als Ursache der Leberverhärtung des Pferdes anzusehen? [**Is the ingestion of species of Senecio the cause of cirrhosis of the liver in horses?**]—*Dtsch. tierärztl. Wschr.* 62, 1-3. 1771

In recent years there has been a marked spread of senecio species in pastures and an increase in cases of liver cirrhosis in horses.

In 6 months, one farm lost 6 horses which showed typical symptoms of senecio poisoning. The lucerne hay fed to the animals was found to be heavily contaminated with *Senecio vernalis*. Feeding experiments with this hay set up typical symptoms of poisoning in a pregnant mare. Sugar appeared in the urine 5 days after feeding began and the urine specific gravity rose from 1.035 to 1.065, but clin. symptoms of poisoning did not appear for approx. 50 days. The earliest sign of poisoning was an increase in blood bilirubin which rose from 1.17 mg.% to 5.64 mg.%. On P.M. examination the liver was swollen and cirrhotic. The foal, which was born soon after the beginning of the experiment, was suckled by the mare but remained healthy. Fresh green senecio fed to horses and cattle for 7 weeks failed to set up symptoms of poisoning.

—J. A. NICHOLSON.

LOHWAG, K. (1955). Trifoliose. [**Trifolium hybridum poisoning.**]—*Wien. tierärztl. Mschr.* 42, 539-541. [English, French and Italian summaries] 1772

T. hybridum under appropriate circumstances produces photosensitization in cattle, horses and sheep. There is a reduced food intake, swelling of the tongue, lips, eyelids, ears, etc. Other *Trifolium* species do not appear to cause photosensitization.—J. A. NICHOLSON.

FILMER, J. F. (1955). **Losses from facial eczema can be prevented.**—*N. Z. J. Agric.* 91, 561-563; 565 & 567. 1773

F. describes in detail the practical prevention of facial eczema. The condition is only likely to occur on perennial ryegrass and short-rotation ryegrass in a wet warm spell following a period hot and dry enough to depress the growth of pasture even though it remains green. Temperature and rain conditions which keep pasture growing normally do not lead to facial eczema. The chief feature in prevention is to keep sheep off dangerous pastures, either by providing alternative safe pasture, or, in the case of mature animals, limiting consumption of pasture by deliberate over-stocking. The former method is preferable for hoggets, which may be grazed on pure white clover, rape, chou moellier, kale or turnips. Over-stocking, to be successful with ewes, must be applied immediately rain falls, it must be high enough to ensure no grass is left in the paddock after 24 hours, and ewes must be kept in the paddock until the pasture becomes safe. Diet is supplemented with hay, and although

14 days' complete starvation will do no serious harm, water supplies must be adequate.

Precautions must be maintained until there is a marked change in the weather, *i.e.*, a pronounced fall in temperature, or change from warm and showery to hot dry conditions, but pastures may become dangerous more than once in one autumn. Experience over 12 years has shown that the measures described afford almost complete protection. There is no effective treatment for facial eczema and skin lesions improve without therapy.

—A. B. PATERSON.

CALLOW, L. L. (1955). **Sawfly poisoning in cattle.**—*Qd agric. J.* **81**, 155-161. 1774

In several of the grazing areas of Queensland, poisoning of cattle and sheep occurs from ingestion of larvae of the sawfly (*Platypsectra interrupta*). Three lb. of larvae will kill a steer, but 3 oz. are sufficient for sheep. The principal food tree of the sawfly is the silver-leaf ironbark, and the distribution of the fly corresponds to some extent with that of the tree. Eggs are deposited on young, well-formed leaves, which serve as food for the larvae. As the leaves are stripped, larvae descend to the ground in huge numbers, and over a period of 3 weeks either pupate or die. Large heaps of dead larvae often accumulate and stock may develop a taste for them. This depravity may possibly be due to phosphorus

See also abst. 1832 (report, Western Australia).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

BLOUNT, W. P. (1955). **Recent advances in poultry therapeutics.**—*Vet. Rec.* **67**, 1087-1097. Discussion: pp. 1098-1103. 1776

B. discussed antibiotics, sulphonamides, nitrofurans, aminonitrothiazole, arsenicals, anthelmintics and drugs used against external parasites. He mentioned the uses of therapeutic agents against specific diseases, and against conditions of doubtful aetiology for which their value is not proven and their use empirical. In discussion on the paper, Wilson stressed the importance of the drinking water as a vehicle for drug therapy, mentioned the superiority of the sulphonamides over the nitrofurans against caecal coccidiosis, and deplored the use of drug therapy as a substitute for good husbandry. Further indications for drug therapy were mentioned by other workers and criticisms were made of the field evidence presented in the paper. Atten-

tion was drawn to dangers associated with premedicated food.—F. T. W. JORDAN.

JOYNER, L. P. & DAVIES, S. F. M. (1956). **Sulphaquinoxaline poisoning in chickens.**—*J. comp. Path.* **66**, 39-48. [Authors' conclusions modified.] 1775

The greater susceptibility of chicks at the age of 4 to 8 weeks to sulphaquinoxaline cannot be attributed to greater absorption of the drug at that age. The increase in the blood clotting time which follows administration of the drug does not vary with the age of the birds. There was a close correlation between the concentration of sulphaquinoxaline in the blood and the blood clotting time; the latter increased almost as soon as the sulphaquinoxaline began to appear in the blood and diminished promptly after withdrawal of the drug. Administration of vitamin K or its analogues reduced the blood clotting time of birds receiving sulphaquinoxaline, but did not reduce the incidence of lesions.

Dietary supplements of *p*-aminobenzoic acid or injections of ascorbic acid, vitamins A, B₁, B₆, D, K, riboflavine, and pantothenic acid did not reduce the incidence of lesions of sulphaquinoxaline poisoning.

tion was drawn to dangers associated with premedicated food.—F. T. W. JORDAN.

ROLLE, M. & MAYER, H. (1955). Experimentelle Studien über die Entwicklung von Meerschweinchen und die Änderung ihrer Darmflora nach Verabreichung von Aureomycin. [Experimental studies on the development of the guinea pig and the changes in the intestinal flora following the administration of aureomycin.]—*Zbl. Vet. Med.* **2**, 693-699. [English, French and Spanish summaries. Abst. from English summary.] 1777

For the first 14 days during daily oral administration of aureomycin g. pigs showed a marked loss in weight. Aureomycin also produced a significant change in the intestinal flora, which came to consist almost entirely of streptococci (*Str. faecalis*) instead of the

normal lactobacilli. After prolonged administration of aureomycin, lactobacilli once more predominated in the large intestine. At the same time there was a marked increase in body wt. in spite of continued dosage with the antibiotic. A few animals died. Deaths coincided with maximal changes in the gut flora and when loss in body wt. was most marked.

AGRESTI, A. (1954). L'iperazotemia nella terapia con isonicotilidrazide (INI). [The development of hyperazotaemia in the course of treatment with iso-nicotinic acid hydrazide.—*Profilassi*, 27, 1-4. [English and French summaries.] 1778

Three dogs showed an increase in serum urea during treatment with iso-nicotinic acid hydrazide. This, as well as increased urea synthesis by the liver, was attributed to the rise in circulating ammonia resulting from the metabolism of the drug.—G. P. MARSHALL.

SADEK, S. E., HANSON, L. E. & ALBERTS, J. O. (1955). Suspected drug-induced anemias in the chicken.—*J. Amer. vet. med. Ass.* 127, 201-203. 1779

This paper gives histories of outbreaks of disease in 4 flocks of fowls which had received treatment with drugs which in all instances included sulphaquinoxaline. In 2 of the flocks the blood changes were essentially similar to those described in hypoplastic anaemia in man. In one flock the major picture was that of agranulocytosis. The fourth flock showed evidence of hypoplastic anaemia. From 5-40% of the birds had symptoms of disease, but the mortality was not high. Blood and bone marrow findings from affected birds are described.—S. BRIAN KENDALL.

KOGER, R. B. (1955). Some clinical uses of prednisone in dogs.—*Vet. Med.* 50, 713-715. 1780

This newly discovered adrenocortical steroid, given usually as a single i/m inj. of 1 mg. per lb. body wt., proved effective in the control of "summer eczemas" of dogs. It was also valuable in stress conditions remaining after the primary disease had been controlled.

—D. POYNTER.

AROLDI, E. (1955). Funzione del citocromo "C" e sue applicazioni in terapia. [Function and therapeutic application of cytochrome C.]—*Profilassi*, 28, 147-149. 1781

A discussion of various theories on the role of cytochrome C in tissue respiration and

of several attempts to use it as a therapeutic adjunct in various parenchymal liver conditions.—No original work.

—G. P. MARSHALL.

BASHKIROV, B. A. (1955). [Anaesthesia of the udder in cows and its therapeutic effects.]—*Veterinariya, Moscow*, 32, No. 1, pp. 74-77. [In Russian.] 1782

Anaesthetic soln. was introduced into the connective tissue space between the psoas major and the psoas minor muscles by means of a hypodermic needle 10-12 cm. long, inserted between the transverse processes of the 3rd and 4th lumbar vertebrae. It blocked the external mammary nerve, the lateral cutaneous nerve of the thigh, neighbouring branches of the sympathetic trunk, and apparently also the ilio-hypogastric nerve. The dose of procaine injected was 7 ml. of a 3% soln. or 80-100 ml. of a 0.5% soln., per 100 kg. body wt. The anaesthesia obtained was used for teat surgery and also as a treatment of acute mastitis.—R.M.

HALL, L. W. (1955). Safe anaesthesia.—*Vet. Rec.* 67, 1030-1032. Discussion: pp. 1032-1035. [Author's summary slightly modified.] 1783

Premedication is considered to be essential for all except very minor operative interferences. The combination of narcotics with analgesic and relaxant drugs to provide good operating conditions without gross depression of the c.n.s. is discussed. The position with regard to the parenteral administration of fluids and electrolytes is regarded as being unsatisfactory. Some of the ways in which the surgeons' work can be facilitated are mentioned and it is emphasized that safety in anaesthesia depends on the experience, practical ability and theoretical knowledge of the anaesthetist.

FAUSTINI, R. (1954). Potenziamento della narcosi ultrabreve da Farmotal con Largactil nel cavallo. [Synergistic action of chlorpromazine ("largactil") in thiopentone ("farmotal") anaesthesia in the horse.]—*Profilassi*, 27, 173-179. [English summary.] 1784

Tests in 20 horses showed that i/m injection of chlorpromazine in a dosage of 1 mg./kg. produces hypothermia, bradycardia, bradypnoea, dulling of the sensorium and drowsiness lasting for about 3 hours. The

same dose of chlorpromazine markedly potentiated i/v thiopentone anaesthesia in that it roughly doubled the sleeping time following

doses of 10 and 7.5 mg./kg. of the latter; and recovery was quiet and uneventful.

—G. P. MARSHALL.

See also absts. 1483 (hydrocortisone in mastitis); 1517 (swine erysipelas); 1527 (terramycin in pullorum disease); 1528 (antibiotics in fowl typhoid); 1553 (erythromycin in leptospirosis); 1555 (leptospirosis); 1584-1585 and 1588 (antricyde); 1589-1591 (coccidiosis); 1594 (ovine piroplasmosis); 1595-1596 ("tiargen"); 1617 ("WCS-90"); 1619 (Borna disease); 1627 (chloramphenicol in ovine ophthalmia); 1666-1668 and 1672-1674 (insecticides); 1677, 1681-1683 and 1686-1689 (anthelmintics); 1700-1705 (antibiotic feed supplements); 1716 (leucovorin and chlortetracycline in ovine cobalt deficiency); 1775 (sulphaquinoxaline poisoning in chicks).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

MONTGOMERY, P. O'B. (1955). **Effect of amniotic fluid on cortisone inhibition of growth.**—*Proc. Soc. exp. Biol.*, N. Y. **90**, 410-411. [Author's summary modified.] **1785**

Cortisone administered s/c to newly-hatched chicks daily was a powerful growth inhibitor for the 18-day period of this study. A partial reversal of its effect was accomplished by the simultaneous administration of cattle amniotic fluid.

PUGH, P. D. S. & SCARISBRICK, R. (1955). **Acetate uptake by the foetal sheep.**—*J. Physiol.* **129**, No. 3, p. 67P. of Proceedings. **1786**

Nine ewes some 140 days pregnant were anaesthetized and the umbilical cords isolated. The acetate levels in samples from the ewe's carotid artery and the umbilical artery and vein were determined. Comparison of the levels in the umbilical vein and artery indicated the amount of acetate utilized by the foetus. The foetal acetate levels were constantly much lower than the maternal values, indicating considerable resistance to transfer of acetate across the placenta. The amount utilized by the foetus appeared to be limited by the low quantities available owing to this latter factor. The authors concluded that, quantitatively, acetate plays a minor role in comparison with oxygen in satisfying the energy demands of the sheep foetus.—C. C. BANNATYNE.

DEMPSEY, M. (1955). **Some seasonal variations in lambskins.**—*J. R. micr. Soc.* **75**, 103-110. [Author's summary slightly modified.] **1787**

D. investigated changes in the dermis of Kerry Hill lambs throughout one year. The main change observed was in the sweat glands which were largest in the warmer months. He discussed the mechanism by which they appear and disappear. Fat varied irregularly. Elastin and reticulin did not vary according to age or season.

KING, J. O. L. (1955). **The effect of stilboestrol implantation in cockerels on body temperature.**—*Brit. vet. J.* **111**, 407-410. [Abst. from author's summary.] **1788**

The average mid-morning rectal temp., from recordings made 3 times a week for 6 weeks in 10 groups comprising a total of 95 capons and 97 cockerels, was higher in the cockerels in 7 groups, higher in the capons in 2 groups and the same in cockerels and capons in one group. From the weekly av. temp. for all groups, the higher temp. of the cockerels was shown to be statistically significant.

EWY, Z. & PIGONIOWA, H. (1955). **Studies on the sympatheticotonic character of faecal extracts of cows.**—*Bull. Acad. polon. Sci. Cl. II.* **3**, 189-193. [In English.] **1789**

About 10% of dialysates of the faeces of both pregnant and non-pregnant cows contained substances which caused the release of spermatozoa into the urine of male frogs, *Rana esculenta*, and also dilated the pupils of isolated frogs' eyes. They are probably of a sympatheticotonic rather than gonadotrophic nature.—A. ACKROYD.

BANIK, U. K. & REINEKE, E. P. (1955). **Properties of the gametokinetic substance in the feces of dairy cattle.**—*J. Dairy Sci.* **38**, 1139-1146. [Authors' summary modified.] **1790**

The authors confirmed the presence in cattle faeces of a gametokinetic factor that will induce the release of spermatozoa in male amphibia. *Rana pipiens* frogs responded in a manner similar to that reported for the Indian toad, *Bufo melanostictus*. The faeces of pregnant cattle contained more of the active substance than the faeces of non-pregnant cattle. Its possible validity in pregnancy diagnosis was not evaluated. It is highly soluble in water and water-acetone mixtures. It is also soluble in pure *n*-butanol, but not in diethyl ether, chloroform, acetone, or ethyl alcohol. It is non-dialysable through a cellophane membrane. Partial inactivation occurred when extracts were dried at 94°C. However, appreciable inactivation did not result from boiling active solutions for up to 60 min. Inactivation was complete upon refluxing with 15 or 20% of conc. hydrochloric acid, but was only partial with 10% HCl. Purified extracts

failed to induce ovulation when injected into virgin doe rabbits. It was concluded that the gametokinetic factor differs from the known gonadotrophins, and also from the androgen previously described in cattle faeces [*V.B.* 22, 3896].

KARG, H. (1955). Das Verhalten der Bluteosinophilen als Belastungsprobe bei Rind und Schwein. [The behaviour of blood eosinophiles as a test for stress reactions in cattle and pigs.]—*Zbl. VetMed.* 2, 682-692. [English, French and Spanish summaries. English summary modified.] 1791

Observation of the eosinophile leucocytes of the circulating blood is suitable for detecting the reaction of the host to certain acute "shocks" which act on the pituitary-adrenal system. A suitable method for cattle and pigs is described. Taking account of day-to-day variations, the results are described of a number of physiological and pharmacological stimuli such as climbing to higher mountain pastures, transport, injections of adrenocorticotrophic hormone and of penicillin.

I. KOLB, E. (1955). Ein Beitrag zur Kenntnis der sauren und alkalischen Phosphatasen im Serum von Wiederkäuern. [Recognition of acid and alkaline phosphatases in the serum of ruminants.]—*Arch. exp. VetMed.* 9, 322-327. 1792

II. KOLB, E. (1955). Untersuchungen über Diastase- und Lipase-aktivität im Serum von Wiederkäuern (Kälber, Rinder, Schafe). [Activity of diastase and lipase in the serum of ruminants.]—*Ibid.* 328-332. 1793

I. & II. Serum acid phosphatase in calves was between 0.6 and 3.9 Gutman units, and alkaline phosphatase 18.6 to 39.0 King-Armstrong units. Corresponding figures for adult cattle were 0.3-5.4 and 4.5-21.0, and for sheep, 0.6-3.3 and 11.0-28.2. Data are given for diastase and lipase activity in serum of ruminants, the former being high when the latter is low, and *vice versa*.

—F. R. PAULSEN.

MOCHRIE, R. D., HALE, H. H., DEMBICZAK, C. M., EATON, H. D., PLASTRIDGE, W. N., JOHNSON, R. E. & BEALL, G. (1955). Effects of vacuum level and milking duration on Guernseys and Holsteins differing with respect to lactation number and status of udder health. I. Udder health.—*J. Dairy Sci.* 38, 1272-1282. 1794

CARUOLO, E. V., DEMBICZAK, C. M., MOCHRIE, R. D., JOHNSON, R. E., EATON, H. D.,

SPIELMAN, A. A. & BEALL, G. (1955). Effects of vacuum level and milking duration on Guernseys and Holsteins differing with respect to lactation number and status of udder health. II. Milk yield, milking time, and rate of milk flow.—*Ibid.* 1283-1292. 1795

Twenty-four Guernseys and 24 Holsteins were used in these experiments. The vacuum levels tested were 10, 13.5 and 17 in.

I. Vacuum level had little or no direct effect on udder health. Leaving the teat-cups attached to the udder for double the normal milking period brought about more rapid weekly increases in the number of leucocytes and in the chloride content of the milk.

II. Vacuum level had no appreciable effect on the milk yield. Raising the vacuum level reduced the milking time and the time taken to reach peak flow, and increased the rate of milk flow. Milking for double the normal period slightly increased the milk yield, and decreased the stripping time. It did not appreciably affect the milking rate or the time taken to reach the peak rate of flow.

—M.G.G.

BILBEY, D. L. J. & NICOL, T. (1955). Normal blood picture of the guinea pig.—*Nature, Lond.* 176, 1218. 1796

The results of r.b.c. and w.b.c. counts, platelet counts and haemoglobin estimations on the blood of 53 normal g. pigs were recorded.—JOHN SEAMER.

SCHAMBYE, P. (1955). Experimental estimation of the portal vein blood flow in sheep. I. Examination of an infusion method and results from acute experiments.—*Nord. Vet. Med.* 7, 961-975. [In English. German and Danish summaries.] 1797

Tracer blood or dye was infused into a branch of the portal vein: the degree of dilution was then estimated from samples withdrawn from the main portal vein. The method depends for success upon adequate mixing of the labelled blood in the portal bloodstream. In the sheep the gastro-splenic and mesenteric veins converge from almost opposite directions to form the portal vein. This suggested a degree of mixture which was supported by experiments. The average portal flow was 29 ml./kg. body wt./min.—JOHN SEAMER.

ALEXANDER, F. (1955). Factors affecting the blood sugar concentration in horses.—*Quart. J. exp. Physiol.* 40, 24-31. [Author's summary modified.] 1798

The author studied blood-sugar concen-

tration in 8 ponies over periods from 3-36 months. Orally administered glucose caused hyperglycaemia associated with the presence of a large concentration of glucose in the ileum. Within 3 hours of feeding hay a yeast-fermentable reducing substance appeared in the ileal contents in concentrations equivalent to 40-90 mg. glucose/100 ml. Withholding food normally caused a fall in blood sugar conc. during the first 48 hours and thereafter a small rise. It is stated that horses, in contrast to ruminants, are able to digest and absorb soluble carbohydrates without subjecting them to fermentation.

KURILOV, N. V. (1955). [Clinical investigation of the functional activity of the horse's stomach.]-*Veterinariya, Moscow*. 32, No. 2, pp. 53-59. [In Russian.] 1799

Experiments were carried out with 3 foals, each having a Pavlov pouch of the stomach. The action of stimulants, such as decoction of hay (2 litres) or crushed oats in water (2 litres), on gastric secretion was studied by allowing the horses to drink them; ingestion during a period of intense excretion of gastric juice inhibited the excretion. The stomach tube was of little value for administering stimulants or obtaining samples, because its insertion caused copious gastric excretion, which lowered the acidity of the stomach contents; trauma during introduction of the tube inhibited gastric secretion in some horses.

—R. M.

HILL, K. J. (1955). Continuous gastric secretion in the ruminant.—*Quart. J. exp. Physiol.* 40, 32-39. 1800

H. stated that continuous secretion of gastric juice in goats and sheep is stimulated mainly by the passage of ingesta from rumen to abomasum which does not cease even in animals starved up to 48 hours. Gastric juice secreted by sheep and goats deprived of food for periods of up to 48 hours was of a somewhat lower acidity and less in quantity than normal. Secretion was brought to a standstill

See also *absts.* 1840 (book, hormones); 1841 (annual review of physiology, vol. 16); 1842 (book, physiology of domestic animals); 1843 (book, pineal gland); 1844 (book, human brain stem).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

SEIDEL, G. (1955). Zum augenblicklichen Stand einiger serologischer Fragen im Hinblick auf die Ausführung der bakteriologischen Fleischuntersuchung. [Serological methods in meat inspection.]-*Mh. VetMed.* 10, 57-62 & 84-86. 1804

when the forestomachs were emptied. Omasal ligature preventing ingesta from entering the abomasum in anaesthetized lambs resulted in reduced gastric secretion consisting mainly of mucus.—E.G.

SAVINSKAYA, N. V. (1954). [Role of the nervous system in heat loss in fine-wooled sheep.]-*Rep. 1st Soviet Conf. vet. Derm. Moscow*, 1954. pp. 24-28. [In Russian.] 1801

S. studied the reaction of fine-wooled sheep to a warm environment and to cold (2°C.) and hot (50°C.) baths by measuring the skin and rectal temp., pulse, respiration and excretion of sebum. In some sheep the spinal cord or vagus nerve had been previously severed. He concluded that heat loss was controlled by the autonomic nervous system, the parasympathetic controlling secretory functions. To avoid stress on hot summer days, fine-wooled sheep on the steppes of the Rostov region should be provided with natural or artificial shade during the day and pastured during the night.—F. A. ABBEY.

WILLIAMS, R. C. (1955). The osteology and myology of the ranch mink (*Mustela vison*).—*Thesis, Cornell*. pp. 62. 1802

This is a carefully conducted and well illustrated study of the subject. The osteology was studied in 27 skeletons. Myology was studied in 10 dissected specimens.

—H. L. GILMAN.

CASAROSA, L. (1955). Strutture linfatice in fegato di suino. [Lymphatic structures in the liver of the pig.]-*Clin. vet., Milano*. 78, 193-209. [English summary.] 1803

A description of the macroscopic appearance and histology of the small lymph nodes situated in the interlobular tissue, first described by Kisselev (1869), and of proliferations of lymphatic tissue in lesions caused by *Fasciola hepatica* in the liver of the pig. C. discussed the functional significance of these structures. There are 22 photomicrographs.

—F. R. PAULSEN.

After reviewing the literature, S. described some methods of serological demonstration of bacterial infections in meat, and emphasized the need for more research.

—M.G.G.

OLIVANT, J. M. (1955). **A review of some factors influencing the post-mortem changes in meat.**—*Roy. Soc. Hlth. J.* 75, 513-519. [Discussion: pp. 519-520.] 1805

A general discussion of the factors influencing the texture and keeping quality of meat. The factors discussed were pre-slaughter feeding and fatigue, glycogen content of the meat, pH, cooling, storage temp., and bacterial contamination.—M.G.G.

INGRAM, M. & INGRAM, G. C. (1955). **The growth of bacteria on horse muscle, in relation to the changes after death leading to rigor mortis.**—*J. Sci. Fd Agric.* 6, 602-611. 1806

After whale muscle has gone into rigor mortis, the intrinsic clostridia (*Cl. welchii*) multiply quickly. In the sternocephalicus muscle of dead horses, stimulated electrically to induce rigor and inoculated with strains of *Pseudomonas* and *Clostridium*, growth was slower on the post-rigor slices than on the pre-rigor slices. For several hours after death a lag was noted in growth, especially with anaerobes; this was not affected by induction of rigor.—W. R. BETT.

ATZORI, E. (1955). **Diagnosi differenziale tra adipoxantosi ed ittero ai fini dell'ispezione delle carni, con speciale riguardo all'indagine di laboratorio. [Differential diagnosis of icterus and adipoxanthosis (yellow fat) in meat inspection.]**—*Zooprofilassi.* 10, 383-388. [English and French summaries.] 1807

According to Piettre the kidneys and

medium-sized arteries form very useful bases for the differential diagnosis of icterus and yellow fat. In the former condition the cortical zone of the kidney has a yellowish tint which extends to the pyramids, the medulla (especially the calyces) and the walls of the renal pelvis. The yellow coloration of the larger arteries—due to the elastic fibres in the tunica media—is not seen in normal medium-sized arteries, such as the internal and external iliacs, the brachial and the femoral. It will, therefore, be possible to detect bile-staining of the endothelial layer of these vessels even in cases of slight jaundice. The laboratory test recommended for the diagnosis of icterus is a slight modification of the method described by Piettre [*V.B.* 24, 2918].—T.E.G.R.

WATTS, P. S. & VAWSER, E. L. (1955). **The pasteurization of commercial eggs.**—*Aust. J. appl. Sci.* 6, 255-260. [Authors' summary modified.] 1808

The worst types of dirty eggs were washed on a tape machine, and treated in batches of 240 dozen at either 61.5° or 64°C. for either 90 or 120 sec., or at 63°C. for 90, 120, 180 sec. They were then stored in the cold for 10, 20, 30, 60, 90 and 120 days, in each case followed by further holding at atmospheric temperatures and humidity for 10-20 days. Of the untreated controls about 60% became spoiled. All treatments gave considerable reduction of this loss, some reducing it to 1%. The most efficient method for safe commercial use was heating at 63°C. for 120-180 sec.

See also abst. 1626 (ovine virus abortion in man).

LIVESTOCK HYGIENE

ITTNER, N. R., BOND, T. E. & KELLY, C. F. (1955). **Environment comparisons and cattle gains in wood and wire corrals.**—*J. Anim. Sci.* 14, 818-824. [Authors' summary modified.] 1809

A microclimatic study comparing (1) a wood corral and (2) a wire pen (earth floor) surrounded by a green lucerne field, during the summer of 1954 in California, showed that pen 2 was decidedly cooler. It had an air

temp. 3.8°F. less than that of pen 1, the wind velocity was 1.32 miles per hour faster, water temp. 4.9°F. lower, and the radiant heat load was as much as 9.5 B.Th.U. less per hour per sq. ft. of animal surface. The cattle in pen 2 gained 1.94 lb. per head daily as against 1.51 lb. in pen 1. A substantially cooler environment for cattle can be provided by proper corral construction, good shade, cool water, and a reduction of radiant heat.

REPRODUCTION AND REPRODUCTIVE DISORDERS

KERRUISH, B. M. (1955). **The effect of sexual stimulation prior to service on the behaviour and conception rate of bulls.**—*Brit. J. Anim. Behav.* 3, 125-130. [Author's summary modified.] 1810

At artificial insemination centres, and to some extent on farms where a rigid routine of controlled mating is practised, adequate sexual stimulation prior to copulation is not provided. Sex drive is consequently reduced and the

vigour of the ejaculatory reflex diminished, semen is poor and the conception rate is low; post-consummatory relaxation is prolonged and long periods of sexual continence are required between collections. Old bulls, of which there are many at A.I. centres, are especially affected. When ten bulls which for at least 5 months had been on a sexual regimen of inadequate sexual stimulation, were placed for 5 months on a regimen of intensive sexual stimulation prior to semen collection, there followed a marked improvement in sexual behaviour and a significant rise (8.7%) in the conception rate.

COOPER, D. M. (1955). **A comparison of artificial insemination with natural mating in the domestic fowl.**—*Vet. Rec.* **67**, 461-467. 1811

A comparative test of artificial insemination *versus* natural mating was carried out on 96 pullets over a period of 300 days. The artificially inseminated birds showed good fertility throughout the period, with little deviation from the mean. The naturally mated group showed marked fluctuations from November to April, after which the usual seasonal decline in fertility occurred. Early embryonic mortality was 2% greater in the inseminated birds. Hatchability showed a highly significant difference in favour of the inseminated birds from May to September. There were no significant differences in egg production.—M.G.G.

GRUNERT, E. (1955). Die Biopsie der Uterusschleimhaut der Stute in ihrer Technik und Methodik der Bewertung der histologischen Präparate. [**Biopsy of uterine mucous membrane of the mare and the evaluation of histological preparations.**]—*Arch. exp. Vet. Med.* **9**, 265-283. 1812

Details are given of the design of a biopsy forceps. Pieces of tissue 1-3 cm. long and up to 2 mm. thick can be cut out, and samples can be taken from both horns and from the corpus uteri without withdrawing the instrument. 400 samples have been taken without obvious harmful consequences. The precautions necessary in making the histological preparations are detailed and a form for comparison of samples is appended. The cyclic changes observed in the normal animal are described in some detail.—F. L. M. DAWSON.

HOUGH, W. H., BEARDEN, H. J. & HANSEL, W. (1955). **Further studies on factors affecting ovulation in the cow.**—*J. Anim. Sci.* **14**, 739-745. [Authors' summary modified.] 1813

Epinephrine administered to 14 dairy heifers at the beginning of oestrus did not significantly hasten ovulation. Atropine administered to 11 heifers at the beginning of oestrus blocked ovulation in seven. It appears that luteinizing hormone in amounts sufficient to cause ovulation is released from the adenohypophysis early in oestrus, with individual variation in the exact time of release. Ovulation was blocked in a considerable number of the atropine-progesterone treated cows. This suggests that the previously found ovulation-hastening effect of progesterone in normal cows is not due to a direct action of progesterone on the anterior pituitary.

TEIGE, J. (1955). Blødning etter utklemming av corpus luteum hos ku. [**Haemorrhage following expression of the corpus luteum in the cow.**]—*Nord. VetMed.* **7**, 747-766. [In Norwegian. English and German summaries.] 1814

T. discussed the incidence and predisposing causes of ovarian haemorrhage following expression of the corpus luteum. In order to assess the influence of beet feeding on predisposition to haemorrhage, he fed 3 cows each with 40 kg. beet tops daily for 5 days and gave another cow a total of 255 g. sodium oxalate in divided doses over a period of 17 days. Neither treatment affected the clotting time, bleeding time, prothrombin-proconvertin value, or the number of thrombocytes. Expression of a corpus luteum from the cow given sodium oxalate, followed by injections of stilboestrol, did not result in ovarian haemorrhage.

—HUGH BOYD

ROBINSON, T. J. (1955). **Endocrine relationships in the induction of oestrus and ovulation in the anoestrous ewe.**—*J. agric. Sci.* **46**, 37-43. 1815

Forty-two cross Suffolk and 230 Romney ewes were used in 4 experiments in which pregnant mare's serum gonadotrophin (P.M.S.) was used in various combinations with progesterone and oestrogen in attempts to produce fertile matings. In the Suffolks, a better oestrus response was obtained when a single 1,000-I.U. dose of P.M.S. was preceded by 6 twice-daily doses of progesterone commencing 4 days before, than when the progesterone was given as a single dose. In the Romneys, the optimum oestrus response was obtained when the progesterone was given

in divided dosage commencing 7 days before the P.M.S. injection. Of 144 such ewes inseminated, only 12 lambed.—C. C. BANNATYNE.

HAFEZ, E. S. E. & ATTAR, T. (1955). **Urinary oestrogens in the buffalo as measured chemically.**—*Nature, Lond.* 176, 796. 1816

Buffaloes in the fourth month of pregnancy excreted oestrone and oestradiol, but not oestriol, in the urine, and pregnanediol levels were low. It was necessary to inject i/m at least 60 mg. oestradiol dipropionate in oil in order to produce urinary excretion of oestrogen.—A. B. PATERSON.

I. STOLL, R. & MARAUD, R. (1955). Action de la testostérone sur la morphogénèse de l'épididyme du coq. Evolution des canaux mésonéphrétiques. [Action of testosterone on the morphogenesis of the epididymis of the cockerel.]—*C. R. Soc. Biol., Paris*, 149, 700-703. 1817

II. MARAUD, R. & STOLL, R. (1955). Action de la testostérone sur la constitution de l'épididyme du coq. [Action of testosterone on the structure of the epididymis of the cockerel.]—*Ibid.* 704-707. 1818

I. Under the action of testosterone all the mesonephritic tubes take part, in varying degrees, in the morphogenesis of the epididymis. Normal involution of the tubules is arrested and their elaboration into excretory ducts of the testicle and the associated Wolffian ducts is stimulated.

II. Extensive areas of the mesonephros, which would normally undergo involution,

acquire sexual characters under the action of testosterone. The connexions between the epididymis and the rete testis as well as the number of efferent canals, (the excretory ducts of the testicle), are increased by multiplication of the vestigial mesonephros.

—T.E.G.R.

GOODWIN, K., COLE, R. K., HUTT, F. B. & RASMUSEN, B. A. (1955). **Endocrine relationships in males of a relatively infertile strain of White Leghorn fowls.**—*Endocrinology*, 57, 519-526. [Authors' summary modified.] 1819

With young males from two strains of White Leghorns differing in fertility, it was found that, while body growth was similar, birds of the relatively infertile strain had disproportionately large pituitaries, testes, and combs. Spermatogenesis was closely correlated with the size of the testes. On the basis of organ weight, the hormonal stimulation of the gonad appeared to be established very early in the infertile strain. No strain differences were observed in the microscopic structure of the pituitary, adrenal, or thyroid glands. The amount of gonadotrophic hormone per unit of pituitary tissue (as determined by its effect upon the uterus in young mice) was equal in the two strains at 15 to 16 weeks of age, but the total wt. of the anterior pituitary was about one-third larger in the infertile strain. Sexual maturity was earlier in the females of the infertile strain, although this could be a phenomenon unrelated to the precocious sexual development of the males.

See also absts. 1486 (infection in cattle with beta haemolytic streptococci); 1530-1547 (brucellosis); 1552 (*Leptospira pomona* in bull semen extender); 1561-1562 (bovine vibriosis); 1571-1575 (ovine epididymitis); 1581 (bovine genital flora and sterility); 1584-1585 (dourine); 1586-1588 (trichomoniasis); 1621-1622 (equine virus abortion); 1626 (ovine virus abortion); 1786 (acetate uptake by foetal sheep); 1846 (book, cattle fertility and sterility); 1846 (book, studies on fertility).

ZOOECHNY

HANCOCK, R. C. G. (1955). **Transport of animals and problems arising—air transport.**—*Vet. Rec.* 67, 1054-1061. Discussion: pp. 1065-1071. [Author's summary modified.] 1820

H. described the steps taken to care for the animals, birds and other zoological species arriving at London Airport. From small beginnings after the second world war, within a few years the number of animals handled has come to equal the human passengers. During the peak season in summer, anything between 50,000 and 100,000 living creatures pass in a month through the airport. The need for over-all veterinary control at this and other major airports is emphasized.

HART, D. S. (1955). **The photoperiodic and hormone response of wool growth in sheep.**—*Proc. N.Z. Soc. Anim. Prod.* 15, 57-65. 1821

Sheep kept indoors and fed a standard diet were subjected to different photo-periodic rhythms from artificial light. The wool growth was determined every month by clipping the same marked 10-cm. square and weighing the sample. It was found that sheep subjected to a light rhythm of 2 hours light 4 hours dark had a greater wool growth rate than those exposed to a rhythm of 8 hours light and 16 hours dark, and both groups grew more wool than the controls. By exposing sheep to a photo-periodicity, when their heads were

continually covered in light-proof masks, it was demonstrated that the eye and its immediate surround was the receptor mechanism.

Injection or implantation of *l*-thyroxine resulted in an increase of wool growth. It is stated that a single implant could give 15% increase of the total 12-month production. There was a drop of about 10 lb. in live weight. No deleterious effect was noted on oestrus, conception and lambing rate of ewes.

—W. E. PARISH.

TURNER, C. W. (1955). **Feeding diethylstilbestrol to cattle.** — *Vet. Med.* **50**, 393-394. 1822

Only very small quantities of hormone remain in carcasses of stilboestrol-fed (10 mg. daily) cattle. The method is probably also safe for dairy cattle. Since increased growth, due to pituitary stimulation, is at the expense of fat-deposition an adequate feeding period is necessary for good finish. Other hormones used in husbandry are discussed briefly.

—P. H. HERBERT.

WILKINSON, W. S., O'MARY, C. C., WILSON, G. D., BRAY, R. W., POPE, A. L. & CASIDA, L. E. (1955). **The effect of diethylstilbestrol upon growth, fattening, and certain carcass characteristics of full-fed and limited-fed western lambs.**—*J. Anim. Sci.* **14**, 866-877. [Abst. from authors' summary.] 1823

Experiments were conducted with 200 wether lambs. Treated lambs received s/c a 15-mg. pellet of diethylstilboestrol either in the neck or in the ear. Because of their faster rate of gain, limited feeding was carried out to give similar carcass weights for treated lambs and controls.

On the whole, treated lambs had (1) greater values for rate of gain, pelt wt., carcass length, and percentage of water in the

fat, (2) smaller values for dressing percentage, carcass finish and grade, and external fat thickness, and (3) non-significant differences in the values for wool wt., shrinkage, skin thickness, shank length, percentage of water in the muscle, eye muscle area, liver wt., and percentage of ash in the shank bone. Limited feeding of approx. 85% of the *ad libitum* intake gave gains comparable to those of *ad libitum*-fed controls. Limited feeding intensified the effect of oestrogen in retarding development of the late maturing tissues, particularly external fat. When treated lambs were full fed for longer periods (84 days instead of 49), the live grade score and thickness of external fat increased, and the percentage of water in the external fat decreased, so that there were no significant differences in these characteristics between treated and control lambs.

HAYMAN, R. H., TURNER, H. N. & TURTON, E. (1955). **Observations on survival and growth to weaning of lambs from ewes with defective udders.** — *Aust. J. agric. Res.* **6**, 446-455. 1824

The authors examined the effects of physical impairment or deficiency in mammary function in the ewe on the survival and growth of lambs. Lambs born to ewes having defective mammary function had a lower survival rate, lower daily gain in weight to weaning age and lower wt. at weaning than lambs born to ewes with normal function. The authors indicated that if older ewes are culled on account of defects of the udder a higher proportion of young ewes must be retained. The net result is that if affected ewes are culled, there is little effect on the overall percentage of lambs raised to weaning or on their weaning wt. It was, however, concluded that ewes with bilateral mammary defects should be culled.—P. G. SCHINCKEL

TECHNIQUE AND APPARATUS

TAKÁTSY, G. (1955). **The use of spiral loops in serological and virological micro-methods.** — *Acta microbiol. hung.* **3**, 191-202. [In English. Russian summary. Author's summary modified.] 1825

An account of a serological method, in which serial dilutions are made in grooved plastic plates by means of specially devised calibrated spiral loops, instead of pipettes. The loops hold 0.025-0.2 ml. of fluid. A calibrated instillator serves for measuring diluents and

reagents. A detailed description is given of modification by this technique of existing haemagglutination, haemagglutination-inhibition and complement-fixation methods used in virus research.

LÁSZLÓ, I. & SZABÓ, G. (1955). **A rapid method for determining antibiotics in a single drop of fermentation fluid.**—*Acta microbiol. hung.* **3**, 181-184. [In English. Russian summary. Authors' summary modified.] 1826

By combining the paper disc method with the spiral loop technique [see preceding abst.], it was possible to determine the antibiotic concentration of a single drop of fermentation fluid. This method is of value in the rapid selection of suitable strains for the production of antibiotics.

See also absts. 1482 (use of chick embryos for staphylococcal pathogenicity tests); 1485 (Whiteside test); 1493 (selective medium for *B. anthracis*); 1501 (fluorescence microscopy in diagnosis of T.B.); 1503 (blood medium for tubercle bacilli); 1511 (growth forms of mycobacteria in microculture); 1608 (production of plaques in monolayer tissue culture by Aujeszky's disease virus); 1646-1648 (Newcastle disease virus propagation).

MISCELLANEOUS

LOUTIT, J. F. & RUSSELL, S. (1955). **The effect of atomic explosions upon animals.**—*Vet. Rec.* 67, 1012-1016. Discussion: pp. 1016-1020. [Authors' summary slightly modified.] 1828

From the atomic weapons exploded in the air at Hiroshima and Nagasaki, only a small proportion of casualties were due to ionizing radiation. Weapons exploded on or near ground or in water could give a different pattern. The biological effects of γ radiation in particular are therefore outlined. All mammals react in much the same way. The median lethal dose is some hundreds of roentgens. With doses greater than this, death is due to disturbances of water and electrolytes in the body. Near the mid-lethal dose the main danger is to haemopoietic tissue—aplastic anaemia is the apparent cause of early death, leucemia of delayed death. Effects on germinal epithelium, lens of the eye and skin are also notable. Fall-out of radioactive material under these postulated conditions could also lead to internal as well as external radioactive contamination of animals. Grazing animals are particularly at risk. The individual long-

DOUGHERTY, R. W. (1955). **Permanent stomach and intestinal fistulas in ruminants: some modifications and simplifications.**—*Cornell Vet.* 45, 331-356. 1827

A general account, together with description and illustration of some simplified techniques.

lived fission products and their localization within the body are discussed. Strontium and iodine are considered to be the most critical elements. Both are secreted in milk and thus a hazard to man. With H-weapons as exemplified by the 1954 tests at Bikini the hazards from "fall-out" are many times greater.

ANON. (1955). **Memorial Library, Royal College of Veterinary Surgeons. Catalogue of modern works 1900-1954, with a section showing periodicals and reports.** pp. 98. London: Royal College of Veterinary Surgeons. 15s. 1829

This second edition of the catalogue (first published in 1936 under the title "Text-books published since 1900") indexes under authors and subjects the general holdings of the library except for general reference works, directories, the majority of theses, and books having fewer than 50 pages. Much useful information is given, including the height of the books in centimetres. There are two additional lists—Periodicals, and Reports and yearbooks. Annual supplements to the catalogue are to be issued.—F.E.W.

REPORTS

GREAT BRITAIN. (1955). **Ministry of Agriculture, Fisheries and Food. Report on the Animal Health Services in Great Britain 1954 including Report of Proceedings under the Diseases of Animals Act, 1950.** pp. 106. London: H.M. Stat. Off. 4s. 1830

Outbreaks of the most important notifiable diseases in 1954 were less than in 1953. FOOT AND MOUTH DISEASE with only 12 outbreaks had the lowest incidence for 24 years. Types O, C and A were encountered. SWINE FEVER outbreaks were about half those of 1953. SWINE FEVER (crystal violet) vaccine issues were sufficient to vaccinate 1,060,000 pigs. ANTHRAX outbreaks fell to 350, as com-

pared with 609 in 1953. NEWCASTLE DISEASE was again troublesome, but showed a reduction to 795 outbreaks.

Bovine TUBERCULOSIS eradication shows satisfactory progress. More than half of the cattle in Great Britain were in attested herds by the end of 1954. Compensation for animals slaughtered was £818,912. During the year 101,289 calves were vaccinated with *Br. abortus* Strain 19 vaccine. *Br. melitensis* was detected in milk samples from 20 cows on 4 farms in England and 25 cattle were also slaughtered in Scotland for the same reason.

There has been no case of RABIES in Great Britain since 1922, and no SHEEP SCAB

since 1952, but routine dipping is being continued.

The confirmation of INFECTIOUS ATROPHIC RHINITIS in Great Britain for the first time in a Landrace gilt imported from Sweden in September 1953 and in two litter sisters, the sole survivors of a litter of ten, led to the slaughter of 876 pigs and the payment of £22,149 in compensation.

The trend in MASTITIS of recent years has been a decrease of *Streptococcus agalactiae* and an increase of the Gram-negative infections. In 1954 there was an increase of *Str. dysgalactiae* infections.

In experimental COCCIDIOSIS in chickens sulphadimidine was more efficient than nitrofurazone. Experiments on the simultaneous immunization of dogs against DISTEMPER and CANINE VIRUS HEPATITIS have been continued. MYXOMATOSIS is not spread readily by contaminated cages, food-stuffs, etc. Observations on cattle lungworm larvae show that in either clover or grasses the maximum survival period in summer is seven weeks. Concentrations of glycerol suitable for the storage of spermatozoa at low temperatures are fatal to trichomonads. Stored semen can therefore be made safe in this way.—J. A. GRIFFITHS.

NORTHERN IRELAND. (1955). Agricultural Research Institute of Northern Ireland, Hillsborough, Co. Down. Twenty-eighth Annual Report, 1954-55. pp. 37. Hillsborough, Co. Down: The Institute. 1831

The work of the Institute is reviewed. Results of feeding antibiotics as a supplement to various rations were similar to those obtained elsewhere.—J. A. GRIFFITHS.

WESTERN AUSTRALIA. (1955). Annual report of the Department of Agriculture for the year ended 30th June, 1954. pp. 58. Perth: Reg. A. Nicholas. [Items of veterinary interest pp. 13-17: 48-51. (Hay, G. K. Baron.)] 1832

The incidence of TUBERCULOSIS in the whole-milk herds has been reduced to a low level, but eradication from these herds cannot be expected until testing becomes compulsory in the butter fat areas. During the year 18,185 cattle were tested in 315 herds and 1.22% were positive. No further occurrence of JOHNE'S DISEASE has been detected, and the one herd known to have been infected was released from quarantine. Flocks under official test for PULLORUM DISEASE have increased; 109,089 birds in 67 flocks were tested, and 922 positive reactors (0.77%) were destroyed. 16,222

heifers were inoculated against BRUCELLOSIS with Strain 19 vaccine. OVINE BRUCELLOSIS (EPIDIDYMITIS) has been detected in a number of flocks and this infection is widespread in rams. Further occurrences of *Vibrio fetus* infection in cattle have been confirmed in the South West but the importance of VIBRIOSIS has not yet been assessed. Progress has been made toward the eradication of FOOT ROT in sheep; 46 properties have been freed from infection and 131 are under quarantine.

INFECTIOUS (VIRUS) PNEUMONIA of swine is widely distributed throughout the State. An outbreak of suspected EPHEMERAL FEVER was reported from the Kimberleys. There were no major spreads of MYXOMATOSIS in rabbit infested areas, presumably because of unfavourable seasonal conditions. It was decided to discontinue the centres for distribution of the virus in favour of a mobile two-man virus team; some 155,200 doses of virus were distributed to farmers during the year.

Epidemiological studies of sheep and cattle helminth parasites have been continued in co-operation with the Commonwealth Scientific and Industrial Research Organization.

Investigations of PHOSPHORUS DEFICIENCY in dairy cows, of copper and cobalt metabolism of animals, and of siliceous URINARY CALCULI in sheep are proceeding. The occurrence of COPPER POISONING and of high Cu status of sheep and of some edible plant species has been demonstrated on several properties in the North Eastern Goldfields. Deaths of sheep from LUPIN POISONING associated with liver damage have occurred again this season, apparently related to changes in management practices resulting in sheep receiving a more dominant and protracted diet of the ripe seeds of *L. varius*. Losses can probably be avoided by appropriate management. Laboratory studies of LUPIN POISONING are proceeding. The investigations of KIMBERLEY HORSE DISEASE initiated in this State were transferred to the Northern Territory where feeding tests confirmed earlier evidence incriminating *Crotalaria retusa*. Two properties in West Kimberley, where heavy losses had occurred previously, have remained free from the disease since river frontages, which carry a heavy growth of the plant, were fenced off. It was demonstrated that the native pear (*Xylomelum angustifolium*) was responsible for HYDROCYANIC ACID POISONING in sheep.

—H. W. BENNETT, S.

KENYA. (1955). Department of Veterinary Services Annual Report 1954. [HAMMOND, R. A.] pp. 107. Nairobi: Govt. Printer. Sh. 6. **1833**

Owing to staffing problems the work of the Department has been carried out under considerable difficulties. Although for the first time in many years the Veterinary field staff was brought up to its full strength of 27, the laboratory staff was greatly weakened by the loss of four experienced research officers and many livestock officers were called away for service in the Security Forces.

Despite the protective clearing which had taken place on adjacent African areas in 1953, a sudden flare up of *TRYPANOSOMIASIS* occurred in 1954. *F. & M. DISEASE* vaccine was used for the first time and more than 90,000 cattle on European farms were vaccinated with generally satisfactory results to the individual farmer. The outbreak of this disease in 1954 was attributed to type O virus. It was considered prudent to gain local experience in the use of vaccine before making the vaccination compulsory. In 1954 *F. & M. DISEASE* was looked upon as the most important disease from an economic standpoint, *RINDERPEST* taking second place as a result of the control methods previously adopted. During the year only two small outbreaks of *RINDERPEST* occurred in the European areas. The introduction of compulsory licensing and vaccination against *RABIES* in infected areas has begun to produce results.

Under animal husbandry and livestock improvement schemes, 40,000 to 60,000 small-holdings are to be established in the African areas; this will necessitate the breeding of large numbers of improved productive cattle and the Department's breeding programme has accordingly been expanded.

The concentration of the bulk of Kenya's slaughtering into two main centres made it possible to establish a meat inspection service which provides the maximum safeguards for the consumer with the minimum wasteful condemnation of meat. Slaughter house laboratory services are now provided on the spot, but when required the Veterinary and Medical Research laboratories can be consulted to assist judgment on action to be taken.

The Research Laboratories carry out a diagnostic service (23,649 specimens were examined) and manufacture the large quantities of the vaccines required for use in the

field. Even with these facilities the demand exceeded the supply in some cases.

—D. S. RABAGLIATI.

NIGERIA. (1955). Annual Report of the Veterinary Department Northern Region, Nigeria 1953-54. [MACLENNAN, K. J. R.] pp. 25. Kaduna: Govt. Printer. 9d. **1834**

The chief activity of the Veterinary Department is to assist in increasing food production. While data are lacking, it is estimated that the losses from such diseases as *TRYPANOSOMIASIS* in cattle, *PARASITIC GASTRITIS* in goats and *NEWCASTLE DISEASE* in poultry must be close on £1,000,000 annually.

TUBERCULOSIS in cattle was diagnosed in Sokoto Province and small-scale tuberculin testing showed an infection up to 20%. Although the control of *BOVINE CONTAGIOUS PLEURO-PNEUMONIA* continues to give cause for some anxiety, the position has improved and only 204 outbreaks occurred, against 294 in 1952-53. Methods of control are based on early diagnosis, strict quarantine of affected herds in a central quarantine, and of in-contact herds in the place of origin, and slaughter of all clinical cases as soon as possible, both in affected and in-contact herds. All cattle in quarantine are branded and then vaccinated at least on entering the quarantine and on release.

TRYPANOSOMIASIS control occupies much of the time of the veterinary staff and during the year 183,031 cattle were treated. The chief drug used was quinapyramine sulphate (antrycide methyl-sulphate) and tartar emetic was gradually discontinued. Trials with ethidium bromide were carried out in several areas, with promising results.

F. & M. DISEASE is mild and of little economic importance. *RINDERPEST*, as in previous years, has been kept under control, and losses have been few. The accepted method of control by vaccination of all susceptible animals over one year of age was continued.—D. S. RABAGLIATI.

UGANDA PROTECTORATE. (1955). Annual Report of the Department of Veterinary Services and Animal Industry for the year ended 31st December, 1954. [TAYLOR, J. I.] pp. 47. Entebbe: Govt. Printer. Shs. 2/50. **1835**

Disease control was maintained satisfactorily even though there were widespread outbreaks of *RINDERPEST* in game in parts of the Protectorate. Nearly 832,000 cattle were immunized against *RINDERPEST*, using Kenya

attenuated goat virus vaccine mainly, but also adjuvant vaccine and lapinized vaccine. F. & M. DISEASE continues in epizootic form.

TRYPANOSOMIASIS was controlled by the use of quinapyramine sulphate (antrycide dimethyl sulphate) for 137,680 cattle, and prophylactic injection of quinapyramine (antrycide pro-salt) in 4,890 other animals. Many deaths among calves in areas where EAST COAST FEVER is endemic are probably due to faulty management, particularly malnutrition.

TUBERCULOSIS occurs among the nomadic Ankole Longhorn cattle. Control of the disease is impracticable. ANTHRAX occurs sporadically in most districts; there were 24 outbreaks. Only five districts were free from outbreaks in 1954. There were a number of deaths of human beings after eating infected meat. BLACKLEG occurred in all districts. Outbreaks were controlled by vaccine inoculation. HAEMORRHAGIC SEPTICAEMIA occurred among Ankole Longhorn cattle in Western Buganda and Ankole District; 8,300 cattle were given polyvalent Kenya vaccine. BOVINE CONTAGIOUS PLEURO-PNEUMONIA remained confined to Karamoja.

RABIES was confirmed in a jackal near Tororo township and in a dog in the West Nile District. Quarantine restrictions were applied and 232 dogs were immunized with avianized rabies vaccine (Flury strain).

HELMINTH INFESTATIONS caused losses among all young livestock. LIVER FLUKE INFESTATIONS are common, especially in Teso and Lango, although limited use of anthelmintics has proved beneficial, but there are practical difficulties to be overcome before large-scale measures can be recommended.

—J. A. GRIFFITHS.

FEDERATION OF MALAYA. (1955). **Report on the Veterinary Department for the year 1954.**

[WELLS, C. W.] pp. 52. Kuala Lumpur: Govt. Press, 3s. 6d. 1836

More emphasis is being placed on animal industry investigations and on extension work, both of which functions are intimately linked up with field and laboratory research. The new Veterinary Research Institute, opened in 1953, enabled investigation of an increasing number of pathological conditions.

There was a further increase of 4,000 buffaloes over the 1953 figure; the highest number for the last 20 years, and yet 500 to

700 a month had to be imported from Thailand for the fresh meat market. There was a decrease of 17,000 (6%) of the goat population. There was an increase of 30% in the pig population, which produced 99.5% of the pork requirements and also allowed 31,000 pigs to be exported to Singapore.

No change in the organization of the Department occurred. Briefly, the Federal portion of the Department is responsible for the control of disease, for research, for quarantine of imported animals, and for the maintenance of animal husbandry stations, while the ten State and Settlement Veterinary Departments, responsible directly to their respective Governments, implement central policies, but are otherwise largely independent. The Veterinary heads of these departments have direct access to the Director of Veterinary Services for technical advice and, in certain matters, for financial assistance.

The Federation had a record for freedom from major cattle diseases during the year, but for the first time an outbreak of SWINE FEVER was diagnosed. The year was also free from any case of RABIES in dogs and it is believed that the Federation of Malaya is the first country to claim the eradication of RABIES by the use of chick embryo-adapted vaccine (Flury strain). During the year, 115,076 dogs were vaccinated, and 30,020 were officially destroyed, and probably many more privately. This vaccine was used exclusively during the 1953 and 1954 campaigns, when 191,770 dogs were vaccinated. During the complete campaign (August 1952 – December 1954), 221,889 dogs were vaccinated, 12,000 with the Semple-type vaccine and the remainder with the Flury vaccine. From 1955 the principal control measure will be maintenance of an "immune belt" 30 to 50 miles wide, depending on topography, along the Malayan side of the Thailand-Malayan border.—D. S. RABAGLIATI.

COLONY OF NORTHERN BORNEO. (1955). **Annual Report on the Department of Agriculture for the year 1954.** [GREIG, J. L.] pp. 39. Jesselton: Govt. Printing Department. [Items of veterinary interest (HOLLAND, E. H.) pp. 24-26.] 1837

The only epizootic diseases were DISTEMPER and "HARD PAD" DISEASE of dogs and, in poultry, NEWCASTLE DISEASE, against which 360,497 birds were immunized. PUL-LORUM DISEASE tests showed 7.25% of 1,075

poultry tested were positive. TRYPANOSOMIASIS (SURRA) in horses and cattle is well under control.

A Veterinary Laboratory has been built at Jesselton and was nearly completed at the end of the year. In addition to the common

See also abst. 1582 (East African tsetse and trypanosomiasis research organization).

parasites of the alimentary canal in horses and cattle, the eye nematode, *Thelazia rhodesii*, is prevalent.

Import restrictions have been applied to prevent the introduction of RABIES into North Borneo.—J. A. GRIFFITHS.

BOOK REVIEWS

— (1955). **Advances in veterinary science.** Vol. II. [Edited by: BRANDLY, C. A. & JUNGHER, E. L.] pp. xii + 449. New York: Academic Press, Inc.; (London: Academic Books, Ltd.) \$10.00. 1838

In this volume, the second in the series, the arrangement of the material is on the same lines as in the first volume and each article has a good list of references. Seven of the authors are from the U.S.A., two from New Zealand, one from Great Britain and one from South Africa.

Of great interest in Shope's article is his discussion of the origin of some virus diseases of swine. Discussing swine fever which first occurred in Ohio in 1833 he notes that from 1833 to 1855 outbreaks were few in number and at first confined to the south-eastern parts of the U.S.A. and thereafter became widespread in America and spread to Europe. This suggests that the pig population had been infected from a primary host of the virus, some wild animal native to the south-eastern parts of the U.S.A. Shope then postulates that because of the seasonal incidence of the disease [in the U.S.A.] there must to-day be some secondary host to maintain the virus between the periods of its seasonal occurrence. He also states that the identity of both the primary and secondary hosts is quite unknown. The reasoning in favour of the existence of some wild animal which was the original source of the infection seems to be sound, but it is difficult to understand why a secondary host, other than the pig itself plus the laboratories producing live virus vaccines, is considered necessary. Regarding the identity of the primary host, one would have liked to have a discussion of the possibility that the peccary might have filled that role in the early part of the 19th century, particularly as Craig & Whitney (1916, 1917) in Dakota claimed to have passaged the virus for four passages in the peccary. The infection in their peccaries was asymptomatic. If the peccary was in fact the original source of the virus we would have an interesting analogy with the role of the

wart-hog in a similar disease of the pig, namely African swine fever.

Shope recapitulates his well known theory regarding the role of lungworms and earthworms in maintaining the virus and precipitating seasonal outbreaks of swine influenza in the U.S.A. The behaviour of swine influenza in Great Britain does not suggest that earthworms and lungworms have played the part which Shope assigns to them in the U.S.A. To-day swine influenza is of very rare occurrence in Great Britain if indeed it has not completely disappeared.

The short review of animal mycoses by Emmons is timely. Van Roekel gives an excellent and balanced review of that confusing group of diseases which cause respiratory symptoms in poultry. Ferguson's discussion of the blood groups in the various species of domestic animals and of haemolytic disease of new-born animals is a model of compression and clarity. Deficiency diseases caused by manganese, iodine, cobalt, copper and molybdenum are very clearly assessed by Cunningham with a warning on the dangers of indiscriminate use of mineral mixtures and of the faulty reasoning behind the popularity of what Cunningham calls "shotgun" mixtures. Clare's treatment of photosensitization in animals is on the same lines as the review of the same subject which he published in 1952 (Commonwealth Bureau of Animal Health, Review Series No. 3.) and could have been much shortened had he confined himself to the new work which has been done since 1952. The article by Phillipson on rumen dysfunction deals with the physiology of the rumen in its broadest sense as well as with disturbances of rumination. It is divided into two sections, one dealing with calves and lambs and the other with the adult ruminant. In addition to a discussion of bloat such subjects as scouring in calves, the absorption of colostrum and enterotoxaemia in lambs are dealt with.

Shaw discusses ketosis in cattle with special emphasis on endocrinological factors in causation and in treatment. Haig gives a

useful account of the more recent work on the tick-borne rickettsial infections in South Africa.

The title, "Vibriosis", of Plastring's article is a little misleading as it deals only with *Vibrio fetus* infection in cattle and in sheep. His account of the present state of knowledge on the subject is comprehensive. The meaning of the statement (p. 360) that "There is no question of the venereal nature of bovine vibriosis, and in the writer's opinion there is no doubt that infection can pass from cow to cow without the aid of the bull" is rather obscure. Does it mean that the venereal nature of the disease is not questioned or does it mean that the question of its venereal nature does not arise? Most other workers in the U.S.A., Europe and Great Britain appear to be satisfied that the disease is venereal. It is apparent from earlier statements in his article that Plastring too is satisfied that the bull is the important factor in transmission of infection to cows but unlike others he considers that non-venereal transmission can and does occur. This belief is based on two small experiments where infected and non-infected cows were run together in a paddock and were repeatedly handled for the collection of mucus samples; these conditions are unlike those which occur in the field. The results require corroboration by further controlled experiments.

The article by Boughton on control of internal parasites, mainly coccidia and helminths, is rather different from the usual run of such articles because of its emphasis on the profit motive and its highlighting of the total economic losses attributable to internal parasites. Such vivid statements as "the U.S. produces annually some 700 tons of ascarid eggs" and "there is no market for parasitic protoplasm. The thousands of tons of this costly masterpiece of nature produced each year by our livestock industry represent a complete waste of millions of tons of natural resources" are typical of the approach. Boughton introduces some new terms for anthelmintics which do not seem to be altogether necessary; these are:— "Anterior Preventives" which attack the stage of the parasite that first enters the host; "Internal Curatives" effective against the truly parasitic stages; "Posterior Preventives" which act against the stages, such as the eggs, which leave the host and "External Preventives" which destroy exogenous stages. The references to this article are almost entirely confined to the American literature.

The volume is a valuable reference work especially in these days of rapid development of knowledge and can be recommended with confidence.

BOYD, G. A. [Director, Arizona Research Laboratories, Phoenix, Arizona.] (1955). **Autoradiography in biology and medicine.** pp. xiii+399. New York: Academic Press Inc.; (London: Academic Books Ltd.) \$8.80. **1839**

Part one of this book deals with the theoretical side of autoradiography and contains chapters on the photographic process and materials used, resolution, exposure and sources of error. In part two various techniques are described for flat and non-flat surfaces, macro- and microscopic objects and sections, cells, dust and other particulate matter. Part three consists of about 800 references to relevant literature. There are many illustrations, tables and diagrams and paper, print and binding are very good.—E.G.

— (1955). **The hormone. Physiology, chemistry and applications. Vol. III.** [Edited by: PINCUS, G. & THIMANN, K. V.] pp. xiii+1012. New York: Academic Press, Inc. \$22.00. **1840**

This third volume of a well-known work is not only a chronicle of recent experiments extending in detail matter previously reported, but changes the emphasis of some ideas, whilst many of the chapters revise older concepts and extend into newer research.

The first two short chapters deal with plant growth hormones and hormones in invertebrates. The hormones of the various mammalian glands are reported in detail in subsequent chapters, and with few exceptions the physiology and chemistry of each hormone of importance is given in a clear and lucid manner with a wealth of references.

The book is essentially one for the research worker, but the final chapter deals with clinical endocrinology, diagnostic methods based on the role of the thyroid gland in iodine metabolism, and malfunction of the testes and of the ovary.—D. S. PAPWORTH.

— (1954). **Annual review of physiology. Vol. XVI.** [Edited by: HALL, V. E., FUHRMAN, F. A. & GIESE, A. C.] pp. ix+545. Stanford, Calif.: Annual Reviews, Inc.; (London: H. K. Lewis & Co., Ltd.) **1841**

This volume, prefaced by an interesting and instructive discussion of the study of physiology, contains twenty-one review articles contributed by eminent physiologists from the

U.S.A. and Canada, the U.K., France, Switzerland and Sweden. The subjects dealt with are:—Physical properties of protoplasm; Growth; Radiation effects on mammalian systems; Physiological aspects of genetics; Comparative physiology of nervous systems and sense organs; Energy metabolism; Respiration; The digestive system; Blood clotting and haemostasis; Peripheral circulation; Heart; The kidney; Excitation and conduction in peripheral nerves; Somatic functions of the central nervous system; Visceral functions of the nervous system; Higher functions of the nervous system; Hearing; Pituitary-adrenal system; The parathyroids; Reproduction; and The physiological disturbances produced by endotoxins. A list of references follows each chapter and there are author and subject indexes. The high standard of style and presentation which characterizes previous publications is maintained.—T.E.G.R.

DUKES, H. H. [Professor of Veterinary Physiology, New York State Veterinary College, Cornell University.] (1955). **The physiology of domestic animals**, pp. xii + 1020. London: Baillière, Tindall & Cox. (Ithaca, N.Y.: Comstock Publishing Co., Inc.) 7th Edit. 75s. **1842**

The problem of preserving the original purpose of text-books is no easy one, for the unending stream of new papers makes it difficult for an author to avoid producing a reference book, rather than a text-book suitable for students to use as a guide to their course of studies. It is gratifying, therefore, to record that, in spite of the additional text, this seventh edition retains the object of the original, which is to "provide students of veterinary medicine with a suitable text-book for their course in physiology".

A complete revision has been undertaken and additional material has been provided by a section on Intermediary Metabolism dealing with carbohydrate, protein and fat metabolism, and a chapter on Water, Electrolytes and Acid-Base Balance. A further addition, in the form of an appendix, is a synopsis of demonstrations used to illustrate the author's lectures, special attention being given to projection methods as it so often happens that lecture demonstrations can only be properly seen by a small portion of the class. Other sections have been extended and brought up to date, particularly those dealing with digestion in the large herbivorous animals, and with the heart and circulation. In addition to its

original author, various other authorities have contributed to the production of this edition, which may be highly recommended as a standard work on the physiology of domestic animals.—J. A. NICHOLSON.

KITAY, J. I. & ALTSCHULE, M. D. (1954). **The pineal gland. A review of the physiologic literature**, pp. xiv + 280. Cambridge, Mass.: Harvard University Press; (London: Geoffrey Cumberlege, Oxford University Press). \$5.00. 40s. **1843**

The object of this monograph is to stimulate organized study of the pineal body. The book is in two parts, the first of which, consisting of fifteen chapters, is a survey of world literature on experimental work in connexion with the physiology of the gland. The data are presented in a clear, concise manner and an author's comment forms the concluding part of a number of the chapters. The second part, under the heading "Clinical correlations" deals, in five brief chapters, with certain abnormalities of the pineal, such as calcification, neoplasia (and associated changes in the gonadal system), hypoplasia, and complete absence of the gland. In the author's "concluding comment" the views are expressed that the pineal body is not a functionless, vestigial organ; it does not undergo atrophy at puberty in the human subject and has an active metabolism. In the first 104 pages there are 78 tables classified according to the experimental animals used and results obtained. The remainder of the volume is composed of the main bibliography and two appendices comprising nearly 1,800 references.

The book is published for the Commonwealth Fund.—T.E.G.R.

OLSZEWSKI, J. [Assistant Professor of Neuroanatomy, Department of Neurology and Neurosurgery, McGill University, and Associate Neuroanatomist, Montreal Neurological Institute.] & BAXTER, D. [Research Fellow, Montreal Neurological Institute.] (1954). **Cytoarchitecture of the human brain stem**, pp. 199. Basle & New York: S. Karger. Swiss Fr. 72.80. [In English.] **1844**

This is an atlas of the nuclei of the human brain stem. The main objective is to establish the architectural grouping of the cells and the structural characteristics of the cells in every nucleus. Particular attention has been paid to the cell groups of the reticular formation, which have been relatively neglected in previous atlases. The readers for which it is primarily designed are neuroanatomists and

experimental neurologists interested in the position and morphology of the nuclei, and neuropathologists faced with the problem of finding the origin of pathological changes and recognizing abnormal cells among the numerous different cell forms which abound in the brain stem. To succeed, both diagrammatic drawings and photomicrographs (each of the highest quality) are indispensable for every level of the brain stem. These prerequisites are in fact supplied. Furthermore the descriptive text is exceptionally well written and fully referenced. This book should achieve distinction among the atlases of the central nervous system.—A. S. KING.

ASDELL, S. A. [Professor of Animal Physiology, Department of Animal Husbandry, New York State College of Agriculture, Cornell University.] (1955). **Cattle fertility and sterility**. pp. viii + 227. London: J. & A. Churchill Ltd. 42s. 1845

This book is intended specifically for the farmer and not for the veterinary surgeon. The first 150 pages comprise a useful and well illustrated account of the physiology of reproduction in the cow. Chapters on "heat" and "hormone levels" are particularly good, but there are omissions and inaccuracies which seem to originate from a lack of acquaintance with contemporary published work: perhaps too many of the author's references consist of Cornell University Ph.D. Theses. Though the account of cyclic changes in the uterus and fallopian tubes is good in many respects, some important European work, such as that of Cembrowicz (1946) and Tagliavini (1934) is ignored, and there is inadequate discussion of the variation in content and condition of the endometrial blood vessels. A list summarizing the effects of vitamin deficiencies does not mention vitamin D, possibly the most important in this connexion (Hignett, S. L. & Hignett, P. G. [*V.B.* 23, 2888]). The statement that "bulling slime appears 24 hours before the cow first stands to the bull" is contradicted on the next page; the corpus luteum is stated on one page to take 4 days to develop and 8 days on another.

The section on evaluation of semen does not mention use of the impedance bridge. To say that rectal pregnancy diagnosis was developed by Wisnicky and Casida is not the whole truth, as it was being done in Denmark around 1905. It is strange to find a physiologist believing that ovarian cysts result from uterine infection.

The last third of this book relates to reproductive failure. The heading "nonpathological infertility" is a curious one for chapters on functional *disease*. What is said about the grosser forms of bad management which produce this condition is just, though to claim that 50% of discarded "barren" cows are in-calf may be an exaggeration. Insufficient emphasis is laid on the probability that husbandry policies deliberately adopted by the farmers are largely responsible for the prevalence of sterility. The section on nutrition in relation to infertility is ill-formed and unduly dogmatic. For example, the role of manganese, copper and vitamin D is ignored and the author states that nutritional infertility can exist only when accompanied by symptoms of systemic deficiency. He claims that there is no good evidence that infertility is more common amongst high-yielding cows than amongst low-yielding. The section on the genetic aspect of infertility omits reference to the work of Gregory *et al.* [*V.B.* 22, 1200].

When a physiologist writes on infectious infertility he is going outside his proper field, and it is not surprising that this chapter contains many factual inaccuracies and fails to incorporate recent developments of major importance. The final chapter on functional infertility deals with early foetal death and cystic ovaries. There is an interesting discussion on early foetal death, which does not take into account the major contributions of Olds & Seath (1951) and Stewart [*V.B.* 23, 2125].

—F. L. M. DAWSON.

— (1955). **Studies on fertility. Including papers read at the Conference of the Society for the Study of Fertility, Birmingham, 1955. Being volume VII of the Proceedings of the Society.** [Edited by: HARRISON, R. G.] pp. ix + 156. Oxford: Blackwell Scientific Publications, Ltd. 23s. 1846

This symposium contains fourteen papers, of which two relate to the sheep, and one to the cat, and are therefore of direct veterinary interest. These three papers are of high quality, and the results make them of interest to the practising veterinary surgeon as well as the specialist. Five papers relate to human infertility. The remaining six articles relate to ingenious experimental work on laboratory rodents of both sexes. Among the great volume of such work, these particular papers do not seem of especial interest or suggestion to the worker with an agricultural bias.

—F. L. M. DAWSON.

NUTRITION ABSTRACTS AND REVIEWS

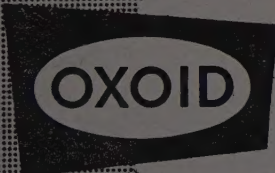
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